REPORT RESUMES

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A COMPREHENSIVE STUDY OF THE MOTIVATIONAL FACTORS UNDERLYING ACHIEVEMENT OF ELEVENTH-GRADE HIGH SCHOOL STUDENTS.
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ACHIEVEMENT MOTIVATION WAS STUDIED BETWEEN OVER- AND UNDER-ACHIEVING STUDENTS IN THE ELEVENTH-GRADE TO DEVELOP AN OBJECTIVE MEASURE OF MOTIVATION FOR USE IN PREDICTING ACADEMIC SUCCESS OR FAILURE. APPROXIMATELY 800 STUDENTS IN PUBLIC HIGH SCHOOLS WERE SELECTED FOR VALIDATION AND CROSS-VALIDATION SAMPLES. THEY WERE DIVIDED BY SEX AND ACHIEVEMENT. EACH WAS ADMINISTERED TEST ITEMS DESIGNED TO MEASURE INDIVIDUAL DEMOGRAPHY, INCLUDING REFLECTED SELF-CONCEPTS, PERSONALITY TRAITS, AND PREFERENCES FOR CERTAIN TYPES OF OCCUPATIONAL CHARACTERISTICS. ANALYSES OF THE RESULTING DATA WAS PERFORMED TO IDENTIFY THE SUBITEMS WHICH DISCRIMINATED BETWEEN OVER- AND UNDER-ACHIEVING STUDENTS IN EACH SEX AND THOSE WHICH DID NOT DISCRIMINATE (VALID ITEMS). COMMON SUBITEMS RELATING TO EDUCATIONAL-OCCUPATIONAL STATUS AND MOTIVATION, APTITUDE, AND GRADE POINT AVERAGE WERE MUCH MORE PREVALENT FOR THE OVER-ACHIEVING SAMPLE, UNDOUBTEDLY DUE TO THE HIGH DROPOUT RATE OF THE UNDER-ACHIEVING SAMPLE BETWEEN TENTH AND ELEVENTH GRADES. ABOUT 75 PERCENT OF THE SUBITEMS WERE VALID FOR BOTH SEXES, BUT VALIDITY PROVED MORE FOR MALES THAN FEMALES. THIS INFORMATION PROVIDED THE GROUNDWORK FOR A RESEARCH INSTRUMENT WHICH, WHEN DEVELOPED, COULD ADD UNDERSTANDING TO THE MOTIVATIONAL COMPLEX. (JH)

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Cooperative Research Project 846
January 1963

Motivation Factors Related to Academic Achievement

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Motivation Factors Related to Academic Achievement

Final Report
of
Cooperative Research Project No. 846

entitled

A Comprehensive Study of the Motivational Factors Underlying Achievement of Eleventh Grade High School Students

William W. Farquhar
Project Director

Office of Research and Publications
College of Education
Michigan State University
East Lansing, Michigan

January, 1963

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CHAPTER I

THE NATURE AND THEORY OF THE STUDY

Much speculation exists that academic achievement is primarily a combination of skill, aptitude, and motivation. Unfortunately, the study of academic motivation has not made the comprehensive strides that have been made in skill and aptitude assessment. The need to understand the forces of academic motivation becomes ever more pressing as society depends increasingly on formal education to undergird a developing technology. The twelve to twenty-five per cent of the students who spend their school years with little or no educational involvement are a luxury the current society cannot afford. Many of these students have the capacity to solve problems at a number of levels, but for a variety of only vaguely understood reasons do not. Furthermore, the potential lack of depth and meaning that these students' lives represent make it even more necessary to comprehend their problems fully.

Granting that the need exists, the question remains: where to start? For the high school group it is apparent that if meaningful programs are to be developed to help the low motivated student, adequate identification and diagnosis is a necessary prerequisite. However, a survey of the instruments available for this purpose indicates a number of limitations. One, the measurement of academic motivation is often investigated only as a sub-problem within the broader area of personality assessment, resulting in short scales with low reliabilities. Two, most of the norms are developed on groups other than high school populations. Three, the devices may be projective, thus presenting problems of administration and interpretation in the high school setting, as well as inherent scaling limitations. Four, frequently items are developed from a shotgun rather than theory base so that the meaning of the results becomes exceedingly difficult to unravel. Five, in a number of cases, validation is not completed on an externally operationally defined criterion group.

It becomes apparent that for high school assessment of acadmic motivation, a new instrument is needed.

Purpose of the Study

The purpose of the project was to study comprehensively the motivational factors underlying academic achievement of selected samples of eleventh grade students in Michigan. Several desired objectives were specified for the end product of the research: 1) an easily administered and scored measure of academic motivation; 2) identification of items which significantly discriminate between high and low motivated students for both validating and cross-validating groups; 3) a test which would be interpreted within a theory of achievement motivation and which would foster further exploration of the motivational complex; and 4) increased understanding of the nature of the difference between over- and under-achieving students.

Generic Definition of Motivation

For the purposes of this research, academic motivation was broadly defined as a combination of forces which initiate, direct, and sustain behavior toward a scholarly goal. Admittedly, the definition is all-embracing but it served at the theory development stages to help identify the nature or the "forces" related to academic achievement.[1]

Underlying Theory

Within this project, behavior theory was conceived as having three overlapping levels. The first two levels represent attempts to increase the definiteness of the nomological network components in the Cronbach and Meehl[2] sense. The first level is labeled focusing because it constitutes the process of delineating plausibly relevant variables. Heterogeneous findings and nebulous theories which provide feasible tenets to explore are the raw data of the decision making process at this stage with two tailed statistical tests. The second level is designated predictive because either past studies or previous theorizing in related areas indicate that the direction of alternative hypothesis can be specified, thus permitting one tailed statistical tests. The third level is the elaboration of the nomological network.[3] At this level laws are developed. For example, the findings of the first two levels could be incorporated in such a manner that the additive or multiplicative nature of the observables and the nature of subclasses or special cases are specified. The third level could be called integrative, a level of sophistication not reached in this study. The first two levels are probably more accurately conceived as a partial theory, thus reserving the full meaning of theory for those interlocking systems of laws about constructs. Some would argue that the first two levels only hypothesize about constructs without theory because of the lack of specification of the interlocking aspects of the constructs. It is possible however, to drop a subjective loosely defined net over the constructs, realizing that the specification of the linkage will come later with new information and insight.

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[1] For a treatment of the problem of defining motivation, see Richard A. Littman, "Motives, History and Causes," Nebraska Symposium on Motivation, University of Nebraska Press, Lincoln, Nebraska, 1958, 114-168.

[2] L. J. Cronbach and P. E. Meehl, "Construct Validation in Psychological Tests," Psychological Bulletin, 1955, Vol. 52, 281-302.

Focusing Aspects of Past Theories and Studies

In attempting to relate parental attitudes, self-concept, and personality traits to academic motivation, past studies and theories were reviewed and summarized. (The characteristics gleaned from the literature may be found in Appendix A.) The resulting characteristics were integrated into brief statements, with particular attention paid to recurring themes. The selection and construction of items or instrument development was guided by these theoretically relevant themes.

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[3] *Ibid.*

Parental Attitudes Toward Child Rearing. Numerous studies have indicated a relationship between child rearing practices and discrepant academic achievement. (See Appendix A for a detailed listing of these studies and their major findings.) A logical synthesis for the purposes of this project was derived from six factorial studies of parent-child relations.[4] Seven recurring factors are summarized with brief definitions in Table 1.1.

Academic Self Concept. Drawing upon the symbolic interaction framework of social psychology and phenomenological field theory, Brookover has presented theoretical tenets basic to the present research.[5] These may

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[4] Richard Q. Bell and Earl S. Schaefer, The Parental Attitude Research Instrument, Laboratory of Psychology, National Institute of Mental Health, Bethesda, Maryland; M. Lorr and B. L. Jenkins, "Three Factors in Parent Behavior," Journal of Consulting Psychology, 1953, Vol. 17, 306-308; G. A. Milton, "A Factor-Analytic Study of Child-Rearing Behaviors," Child Development, 1958, Vol. 29, 381-392; M. Roff, "A Factorial Study of The Fels Parent Behavior Scales," Child Development, 1949, Vol. 29, 29-45; W. H. Sewell and A. O. Haller, "Social Status and The Personality Adjustment of The Child," Sociometry, 1956, Vol. 19, 114-125; and W. H. Sewell, P. H. Mussen and C. W. Harris, "Relationships Among Child Training Practices," American Sociological Review, 1955, Vol. 20, 137-148.

[5] W. B. Brookover, "A Social Psychological Conception of Classroom Learning," School and Society, 1959, Vol. 8, 84-87.

Table 1.1

Summary of Recurring Factorial Themes of Parental Child Rearing Practices

Factor Summary	Brief Description
1. Achievement Pressure	1. Parental concern for a child to achieve, compete, or attain success by conformity.
2. Permissiveness	2. Allows or encourages child to act freely and make decisions without parental consent.
3. Possessiveness	3. Excessive parental concern, especially on the part of the mother, for the child to be dependent upon the parents.
4. Democratic Guidance	4. Consultation with child in making policy decisions and family rules, with a lack of arbitrariness about the decisions.
5. Discipline	5. The frequency and the nature of discipline administered by the parents, particularly in relation to punitive action taken.
6. Acceptance	6. Overt disregard for child's wishes, individuality, attention needs, and fallibility.
7. Interaction	7. A general factor describing the tone of the family emotional and conceptual exchanges.

be summarized as follows: 1) the student learns what he perceives he is able to learn, and 2) significant others, particularly teachers, have important influences on the development of a student's self-concept. Influences take the form of expectancies, which in turn affect the student's ability to perform in the academic setting.

The influences are assimilated by a perceptual mechanism, the result of which is the looking-glass-self or self as others see me. Furthermore, if academic motivation initiates, directs, and sustains learning, the looking-glass-self may be considered a subset of intervening variables affecting scholarship. Granting the above tenets and their relationship to achievement, measures of the self-concept which discriminate between high and low motivated students could be constructed. Martire's[6] research would indicate that this is not an untenable position.

Personality Traits. Extensive research exists on the personality traits of discrepant achievers. (Taylor's comprehensive review of the literature may be found in Appendix A.) The recurring themes appear to group under seven rubrics which are summarized in Table 1.2.

Predictive Theory of Academic Motivation

At the predictive level of theory building, it was assumed that sufficient clarification of motivation existed to permit designating the direction or alternate hypotheses, thus allowing one tailed tests.

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[6] J. G. Martire, "Relationships Between the Self-Concept and Differences in the Strength and Generality of Achievement Motivation," Journal of Personality, 1956, Vol. 24, 364-375.

Table 1.2

Summary of Personality Traits Associated With Academic Achievement

Summary Trait	Brief Description
1. Academic Anxiety	1. Tension expressed as fear of failure, denial of shortcomings, and excessive concern with problems of control.
2. Self Valuation	2. The attitude held toward self, whether positive or negative, realistic or unrealistic.
3. Authority Relations	3. Acceptance or resistance to externally imposed controls, regulations, and assignments by a responsible agent.
4. Interpersonal Relations	4. Feelings towards others reflected in need for their support, denial of ill will, suppression of antagonistic remarks, and active seeking of social relationships.
5. Dependence-Independence	5. The reliance on self or others for direction and decision making.
6. Activity Patterns	6. The area in which satisfaction is pursued, academic or social, individual or group.
7. Goal Orientation	7. The flexibility and persistence exhibited in pursuing immediate, short-term, or long-term objectives.

An adaptation and extension was made of McClelland's hypotheses that N-achievement is composed of 1) long-term involvement, 2) unique accomplishment, and 3) competition with a standard of excellence.[7] The constructs were polarized by postulating a continuum of achievement motivation with the low motivation or N-achievement being opposite in composition from that advocated by McClelland and associates. Furthermore, the constructs were viewed as being related specifically to the academic setting.[8] The hypothesized polar constructs of academic achievement motivation are summarized in Table 1.3.

The first two postulated dimensions are simply the antithesis of McClelland's conceptualizations. The antithetical statement of McClelland's third concept, competition with a standard of excellence, suggests either no competition or even a drive for failure. To avoid the pitfalls of such a thesis, a continuum of standards was conceived with the strongly motivated individual striving for the top and the weakly motivated individual seeking goals at some point just above failure. Thus, the concept was adapted to include maximal and minimal competition.

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[7] David C. McClelland, John W. Atkinson, Russell A. Clark, and Edgar L. Lowell, The Achievement Motive, Appleton-Century-Crofts, Inc., New York, 1953, 110-113.

[8] It is entirely possible that the adaptation of McClelland's constructs has meaning for a general concept of achievement motivation. In one phase of this study the theory was used with a fair degree of success to assess a student's preference for certain values in his future jobs. Even though the total emphasis of the project was on the academic, this excursion into occupational aspirations goes beyond the originally intended limits, indicating the possibility of broader application.

Table 1.3

Summary of a Polar Theory of High and Low Academic Achievement Motivation

High Academic Achievement Motivation	Low Academic Achievement Motivation
1. Need for Long-Term Involvement	1. Need for Short-Term Involvement
2. Need for Unique Accomplishment	2. Need for Common Accomplishment
3. Need to Compete with a Maximal Standard of Excellence	3. Need to Compete with a Minimal Standard of Excellence

Criterion of Motivational Extremes

If groups can be identified who logically represent motivational extremes, the theory detailed in the previous section should have predictive utility in correctly classifying individuals. Historically, over- and under-achievers have been assumed to represent such motivational extremes. Therefore, it was decided that these discrepant achievement groups would be used to test the validity of the academic achievement motivational constructs. Furthermore, at the same time other less clearly defined assumptions would also be tested on these extreme groups to extend the limits of current motivational and achievement knowledge.

The research definition of over- and under-achievement employed in the study was as follows:

> An over-achiever exceeds an aptitude-based expectation of academic performance. Conversely, an under-achiever falls below his expected performance.

The operational definition used to designate which individual belonged to either over- or under-achieving groups is explained in Chapter II.

A Note on the Use of Terms Over- and Under-Achievement

The decision to use the criterion of over- and under-achievement raises the issue of whether or not such entities exist, or if motivation is the major contributing factor in explaining the discrepancies. Some educators believe the terms should be discarded.[9] This position comes about because of three major misconceptions. First, motivation is not seen as a variety of forces which can take the form of multi-factor causality but rather may be conceived as a single causal agent. Second, operational definitions of over- and under-achievement are not sufficiently scrutinized. It is possible by certain definitions to practically eliminate the probability that the classifications are due solely to test error. Third, the terms over- and under-achievement are imparted with a mystical discreteness instead of being viewed as extremes in a continuum. Still, the argument that the term "over-achievement" is an irrational concept is certainly a compelling one. In the final analysis, how can one do better than he is capable of doing? Theoretically, no achiever reaches his capabilities. It is foolish to assume he exceeds his built-in limits. What is needed is a new designation of the individual who works so close to his upper potential that he exceeds the performance normatively predicted for him.

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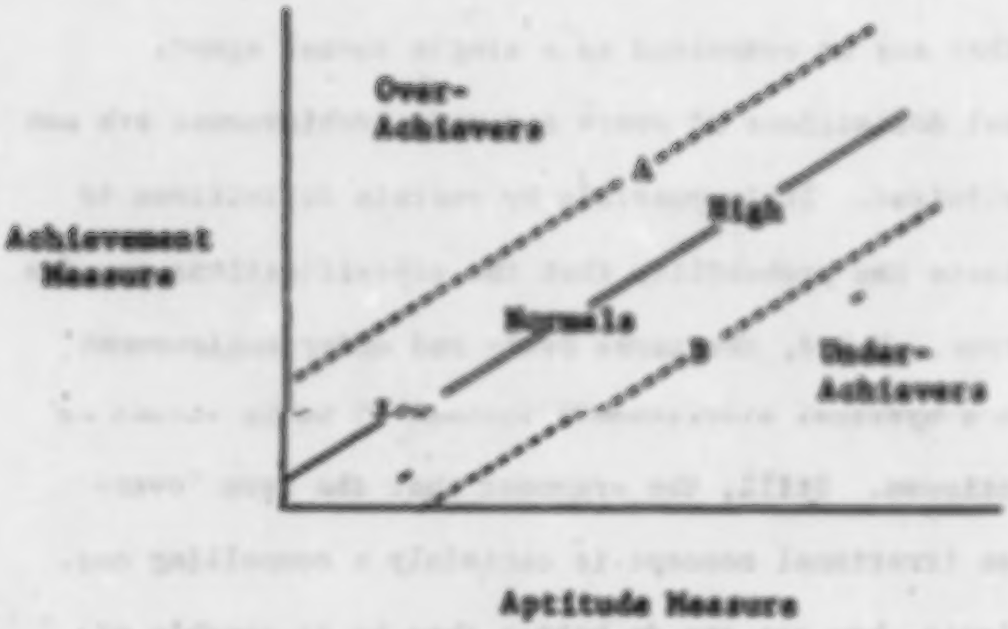
[9] Malcolm A. Lowther, "What Is Over- and Under-Achievement?" School of Education Bulletin, University of Michigan, Ann Arbor, Michigan, April, 1962, 105-108.

If a regression definition of over- and under-achievement is used (as was done in this study), a general population may be divided into various defined subgroups of achievers as illustrated in Figure 1.1.

Figure 1.1

Example of Use of Scatter Diagram to Define Various Subgroups of Achievers


Over-
Achievers
A
High
Achievement
Measure
Normals
B
Under-
Achievers
Low
Aptitude Measure

Note: Lines A and B are established by some fraction of the standard error of estimate.

By this method, it is feasible to view the over-achiever as one who "over" performed in the sense that he has done better than expected. It is also possible to see from Table 1.4 that merely adopting the terms high and low achievement would alternate but not eliminate the necessity of considering the fact that those "far out" individuals exist who plainly do not do what predictors indicate they should do.

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CHAPTER II

DESIGN OF THE STUDY

The study was designed to test the usefulness of the theory outlined in the previous chapter as well as to explore systematically other areas of differences (not defined by current theory but potentially relevant) between high and low motivated students.

Hypothesis

Three major research hypotheses related to item discrimination, test validity, and factor structure were tested within the study.

Hypothesis I: High and low motivated students will respond differently to items or questions designed on the basis of either focusing or predictive theory.

Hypothesis II: Scores based on tests from constructed items derived from testing Hypothesis I will estimate grade point average better than chance and, when added to an aptitude predictor, will increase the precision of measurement.

Hypothesis III: Factor analysis of the items screened through tests of Hypothesis I will yield an interpretable structure which, for certain tests, will support the polar dimension theory of academic motivation.

In the subsequent analysis chapters, Hypothses I and II are restated in Null form. Hypotheses III was kept in the above research form because it was not tested in an exact statistical sense against error models. Several subsidiary hypotheses were developed to test some nuances of the data.

Instrumentation and Demographic Data

Six instruments and a personal data questionnaire were developed for the study. (Copies of the six instruments are reproduced in Appendix B. A copy of the personal data questionnaire is interspersed in Chapter III.) In addition, measures of academic aptitude, academic achievement, and parents' educational-occupational status were collected for all students in the sample.

Focusing Theory Based Instruments

Measures of academic self-concept and parental child rearing attitudes were developed using previous studies and theories as a base for determining pertinent concepts to be included in the items.

Furthermore, a scale of preferences for certain college teacher characteristics was adapted for high school use.

The Word Rating List (WRL). The WRL was developed to measure the *looking-glass-self* cited in the self-concept theory section of the previous chapter. Items were developed by extracting descriptive words and phrases from the self-concept literature and from the review of personality, motivational, and intellectual characteristics of students representing academic extremes. A summary of these characteristics is found in Appendix A. In the initial form, the WRL consisted of 119 items rated on a four point scale (1 = never, 2 = sometimes, 3 = usually, and 4 = always).[1] To tap the reflected image the student held of himself as a learner, each respondent was asked to rate items as he thought his teachers, in general, would evaluate him as a student.

Perceived Parental Attitudes Inventory (PPAI). A common finding in the research literature is that a difference exists between parents of over- and under-achievers in their child rearing practices and attitudes. If parents behave differently toward extreme achievers and these are salient to the perceiver, the discrepancy should be reflected in how the student views his parents' child rearing practices. The student's report then, in preference to the parent's, should reflect his perception of the experience rather than what the parent aspires for the child. One hundred and fifty items were developed using as guidelines: 1) the summary factors of the previous chapter, 2) the characteristics of parent-child relationships of over- (high) and under- (low) achievers reported in Appendix A, and 3) adaptations of previous parental attitudes scales such as those developed by Shoben,[2] Drews,[3] Hurley,[4] Bell and Schaefer,[5] Sewell, et. al.,[6] and Sears, et. al.[7] The student was asked to respond to each statement on a four point scale (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree) as he thought his parents would respond. For those cases where he perceived parental disagreement the student was instructed to rate the item as the dominant parent would. For analysis purposes, the same dichotomizing procedure used with the WRL of grouping "strongly disagree" with "disagree" and "agree" with "strongly agree" was followed.

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[1] A four point scale was used even though in the analysis the ratings were arbitrarily dichotomous grouping "never" with "sometimes" as a zero response and "usually" with "always" as a one response. This procedure was followed on the assumption that the adolescent is less resistant to making *graduated* than *either-or* decisions. Of course, the assignation of which half received the *zero* and which the *one* was dependent upon either the content of the item or the responses because all scales were scored in the direction of high scores meaning high motivation. The relative merit of differentially weighted versus dichotomous scoring for a scale of this length has been shown to be of negligible importance. That is, with increases in numbers of items, the item variance increases linearly while the co-variance increases geometrically. The item co-variance becomes the more important aspect for a lengthy scale.

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[2] Edward J. Shoben, "The Assessment of Parental Attitudes in Relation to Child Adjustment," *Genetic Psychology Monographs*, 1949, Vol. 39, 101-148.

[3] Elizabeth Monroe Drews and John E. Teahan, "Parents Attitudes and Academic Achievement," *Journal of Clinical Psychology*, October, 1957, Vol. 13, 328-332.

[4] John Hurley, *The Child Behavior Inventory*, Unpublished, Psychological Clinic, Michigan State University, East Lansing, Michigan.

[5] Richard Q. Bell and Earl S. Schaefer, *The Parental Attitude Research Instrument*, Laboratory of Psychology, National Institute of Mental Health, Bethesda, Maryland.

[6] W. H. Sewell, P. H. Mussen, and C. W. Harris, "Relationships Among Child Training Practices," *American Sociological Review*, 1955, Vol. 20, 137-148.

[7] R. Sears, E. Maccoby, and H. Levin, *Patterns of Child Rearing*, Row Peterson, Evanston, Illinois, 1957.

Preferred Teacher Characteristics Scale (PTCS). In a study reported by Krumboltz and Farquhar,[8] a significant correlation was found between an experimental instrument, the Preferred Instructor Characteristics Scale, and a measure of non-intellectual personality factors important to academic success, the Opinion, Attitude, and Interest Survey.[9] The Krumboltz-Farquhar instrument was developed postulating a "cognitive-affective" continuum of instructor orientations. The following is their definition of the extremes:

> A cognitively oriented instructor was defined as one concerned with the intellectual, abstract, subject-matter goals of teaching; the affectively oriented instructor was defined as being more concerned with emotional adjustments and student interactions in the classroom.[10]

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[8] John D. Krumboltz and William W. Farquhar, "The Effect of Three Teaching Methods on Achievement and Motivational Outcomes in a How-To-Study Course," *Psychological Monographs*, 1957, Vol. 71, No. 14.

[9] Benno G. Fricke, *The Development of an Empirically Validated Personality Test Employing Configural Analysis for the Prediction of Academic Achievement*, Unpublished Ph.D. Thesis, University of Minnesota, Minneapolis, Minnesota, 1954.

[10] Krumboltz and Farquhar, *op.cit.*

Using a face validity criterion, eight cognitive and eight affective items were constructed by Krumboltz and Farquhar. Each cognitive statement was paired with each affective statement to form a 64 item paired-comparison forced-choice instrument. A parallel scale for high school students was developed for this project using 1) the above definition of instructor characteristics and 2) statements extracted and edited from the Preferred Teacher Characteristics Scale. This scale actually constituted one of those attempts to move slightly beyond the fringes of the original confines of the project. One would be hard pressed to develop a compelling argument supporting inclusion of this variable, other than the fact the Krumboltz and Farquhar study uncovered some interesting findings for a college sample which held the tantalizing possibility of having relevance for high school students as well.

The Human Trait Inventory (HTI). A 125 item personality instrument was constructed from items which previous research had found to differentiate between discrepant achievers. During the first administration of the HTI it became apparent that high school students had extreme difficulty interpretating certain items (such as the typical personality double-negative scale). In order to reduce test anxiety, explanations were given during the administration of the test to the first group. Afterward, it was decided to delete these items from all test booklets by obliterating them with black ink. Furthermore, to reduce the probability of a student losing his place the corresponding number on the answer sheet was also blacked out. As a result, the instrument was reduced to 94 items.

The scales of Altus,[11] Gough,[12] and McQuary and Truax[13] represent the primary item source. The items were edited to make the expression appropriate for adolescents and adapted to the same four point scale (never, sometimes, usually, and always) used with the Word Rating List. Students were asked to rate each item as it applied to themselves. The direction of scoring (either a zero or one dichotomizing between _sometimes_ and _usually_) was designated by the theory of personality traits of discrepant achievers outlined in the previous chapter. A high score indicated responding similar to over-achievers.

Predictive Theory Based Instruments

Two instruments were developed at the predictive theory level, related to the motivational preferences and occupational values of the hypothesized extremes in academic achievement motive.

The Generalized Situational Choice Inventory (GSCI). Two hundred items describing situations logically related to the extremes of the polar dimension theory discussed in the previous chapter were constructed. One alternate of each dichotomized forced-choice was related to the high academic motivation pole and the other to the low academic motivation pole. Originally, an attempt was made to refine the items further by trying to develop alternates related to a single dimension, e.g. long-term involvement only, not unique accomplishment or competition with a maximal standard as well. However, it soon became apparent that the dimensions were too difficult to separate within the time limits of the project. Thereafter, the alternates were merely designated as measuring high or low academic achievement motivation. Students were instructed to choose the alternative which they would most prefer. Responses were scored either zero or one with the high score in the direction of high motivation.

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[11] William D. Altus, "A College Achiever and Non-Achiever Scale for the MMPI," _Journal of Applied Psychology_, 1948, Vol. 32, 385-397.

[12] H. G. Gough, "What Determines the Academic Achievement of High School Students," _Journal of Educational Research_, January 1953, Vol. 46, 321-331.

[13] John J. McQuary and William E. Truax, "An Under-Achievement Scale," _Journal of Educational Research_, January 1955, Vol. 48, 393-409.

Preferred Job Characteristics Scale (PJCS). Sixteen items were either adapted from the Vocational Values Inventory[14,15] or especially constructed to characterize extremes in occupational motivation as logically typified by the polar theory of academic achievement motivation. Eight of the 16 items were related to high and eight to low occupational motivation. Three independent judges were asked to classify the items on the basis of face validity into the two extremes of the polar theory. There was unanimous agreement in the categorizations. In a process identical to that followed for the PTCS, 64 item-pairs were formed by combining the eight high with eight low motivational alternatives.

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[14] L. Johnson, S. Singer, and B. Stefflre, *Vocational Values Inventory*, privately printed, Michigan State University, East Lansing, Michigan, 1958.

[15] B. Stefflre, "Concurrent Validity of the Vocational Values Inventory," *Journal of Educational Research*, May, 1959, Vol. 52, No. 9, 339-341.

The item-pairs were randomly ordered and administered to the student with directions to choose the one alternative he most preferred in a future job.

The Personal Data Questionnaire

An extensive personal data questionnaire was designed to gather descriptive background information on each student. The questionnaire was administered to all students of the sample. They were directed to supply all information as completely as possible.

Aptitude Measures

The Differential Aptitude Test (DAT) Verbal Reasoning, Numerical Ability, and Abstract Reasoning scores were obtained from the school records of each student. Tenth grade California Test of Mental Maturity (CTMM) Language, Non-language, and total scores were obtained for those students who had taken the examinations as a part of their regular testing program. For the remaining schools, the CTMM was administered to the entire tenth grade.

Achievement Measures

Grade point averages were calculated on ninth and tenth grade academic subjects for all students. An academic subject was operationally defined as one involving homework. Schools were asked to provide this information about their curricula.

The procedure employed in calculating the grade point averages was as follows:

1. Cumulative records for each student were microfilmed at the school by apparatus especially constructed for the project.
2. After developing, the record was projected on a screen with a slide projector.
3. Two workers independently machine-calculated the grade point average and cross-checked their results with a third worker who recorded the figures as well as manipulated the slide projector.

Educational-Occupational Status Data Card

To obtain an estimate of educational-occupational status, all students of the sample were asked to complete a Data Card giving 1) the highest educational level attained by their father, 2) the highest educational level attained by their mother, and 3) their father's occupation. In all cases the student entered the numerical equivalent for each classification as well as a word description on the data card. While students were completing the forms, proctors circulated in order to clarify the various problems students had in determining the exact category for their parent's education and occupation. In some cases, the students were not able to provide the requested information. They were instructed to ask their parents any necessary questions and the cards were completed during the second test administration. (A copy of the Educational Level ratings is found in Appendix C.)

Selection of Over- and Under-Achievers

The selection of over- and under-achievement samples was one of the crucial procedures of the project because essentially this process was the operational definition of high and low motivation.[16]

The selection technique followed in this project evolved through three stages. First, some aptitude and achievement data were collected for a small pilot study (100 males and 100 females) to try various over- and under-achievement selection methods. The data were plotted and analyzed in a number of ways. Essentially, this stage was the period of "living and toying" with the data trying to crystallize practical and theoretical meaning from the various approaches possible. (The primary characteristics and analyses of the pilot data are presented in Appendix D.) Second, the experience of the first stage was used to construct a proposed criterion of effective selection of over- and under-achievers (a copy of this is also found in Appendix D). And, third, a technique was developed trying to approximate the requirements of the selection criterion.

Two Stage Regression Technique

The purpose of the selection technique was to identify individuals for whom there was a high probability of correct classification as an over- or under-achiever. Therefore more concern was given to the reduction of the type one error (rejecting an individual as an over- or under-achiever when he should have been selected) than to type two error (classifying an individual as an over- or under-achiever when he should have been rejected). To meet the imposed limitation, a regression technique was developed which involved two stages. Stage I: A regression line was constructed which represented the average regression of X on Y, and Y on X of two aptitude predictors; DAT-VR and CTMM-L. (This line is easily located by determining the point of intersection of the means and standard deviation of the two aptitude predictors.) The line represents the regression between the two variables if the correlation were +1.00. Two lines were drawn parallel to and above the regression line which were a distance away equivalent to the average of the standard error of estimate of the two aptitude predictors. Only those individuals who fall within the limits around the regression line were included in the study. (Stage I is graphically presented in Figure 2.1.)

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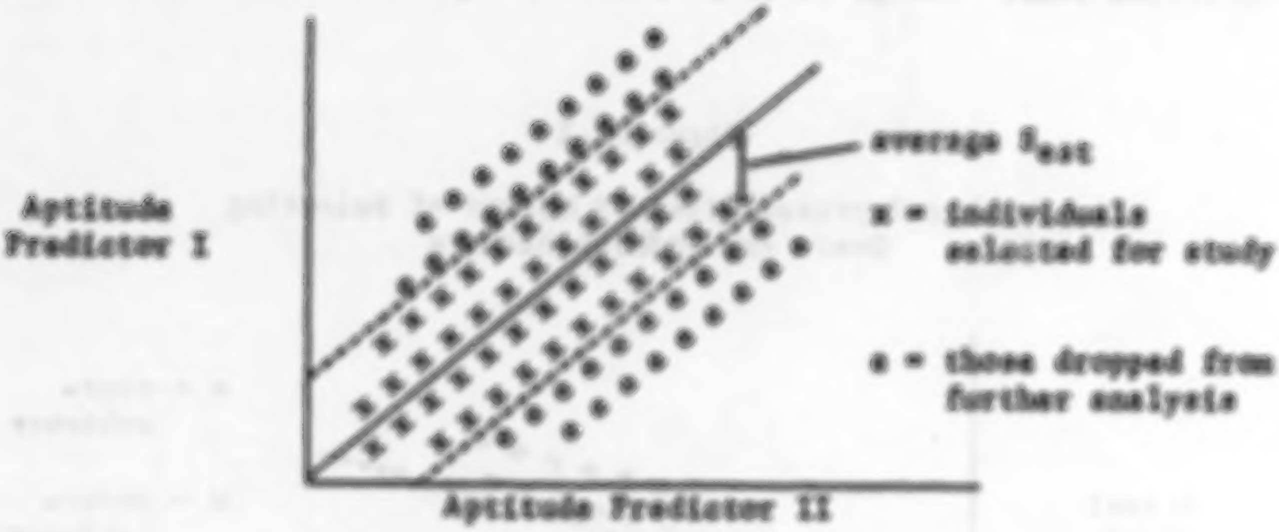
[16] A full exploration of the problem of selection is reported in an unpublished mimeographed report by William W. Farquhar and David A. Payne, "A Comparison of Techniques Used in Selecting Under- and Over-Achievers" which is available from the senior author.

The traditional measurement model which assumes an individual's "true score" to be a function of his test score plus random error needs to be expanded if the first stage of the Two Stage Regression Model selection effects are to be incorporated. The use of Stage I is an attempt to separate error due to instability over time from the random residual (reduce effects outlined under B-2 of the Proposed Criterion in Appendix D). Therefore, an individual's true score is postulated as a function of his test score, plus error due to stability unreliability and random error. Stage I is a rather crude device for controlling stability unreliability to reduce a proportion of those

Figure 2.1

Graphic Representation of Individuals Who Have Increased Probability of Stable Estimated Aptitude


Aptitude Predictor I
average S_{est}
x = individuals selected for study
o = those dropped from further analysis
Aptitude Predictor II

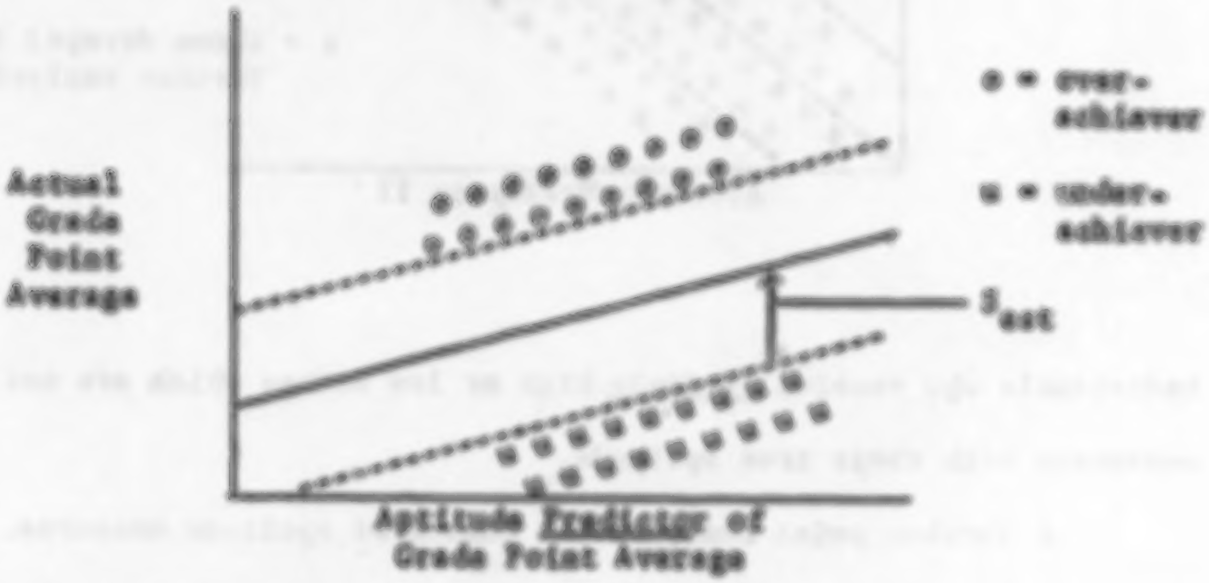
individuals who receive randomly high or low scores which are not commensurate with their true aptitude.

A further point concerns the choice of aptitude measures. The first stage would have been more defensible if the same aptitude measure had been used twice rather than using different ones as was done in this study. The decision to use tenth grade CTMM rather than a repeat of the DAT was made on the basis of availability of data.

Stage II: The aptitude predictor (DAT-VR) which correlated highest with the achievement criterion was used to build a regression line predicting achievement. The standard error of estimate was used to establish limits. Under achievers were defined as those individuals whose actual grade point averages fell at least one standard error of estimate _below_ the regression line prediction of achievement. Similarly, over-achievers were by definition those individuals whose grade point averages fall one standard error of estimate _above_ the regression line. (Stage II is graphically represented in Figure 2.2.)

Figure 2.2

Graphic Representation of Method of Selecting Over- and Under-Achievers


o = over-achiever
u = under-achiever
Actual Grade Point Average
S_{est}
Aptitude _Predictor_ of Grade Point Average

A crucial issue is the effect of removal of erratic sample on a validity coefficient, such as predicting grade point average from either of the two aptitude measures DAT-VR and CTMM-L. The various correlations derived on the pilot sample of Appendix D are presented in Table 2.1.

As would be expected, when the VR and L are correlated separately with grade point average, eliminating the variable sample increases "r". However, the increase is not as marked for the female VR (.68 to .72)

Table 2.1

Correlation of CTMM (L and NL) and (VR, NA, and AR) Scores With Grade Point Averages - Males and Females

Test	Scale Correlated With Grade Point Average	Males Total (N=100)	Males Reduced (N=64)	Females Total (N=100)	Females Reduced (N=49)
CTMM	Language (L)	.41	.51	.57	.70
	Non-Language (NL)	.28		.45	
DAT	Verbal Reasoning (VR)	.46	.56	.63	.72
	Numerical Ability (NA)	.37		.54	
	Abstract Reasoning (AR)	.27		.57	
Multiple	DAT-VR + CTMM-L	.47	.56	.71	.73

as for the male L (.41 to .51), female L (.57 to .70), and male VR (.46 to .56). The results are consistent with past findings that the correlations with the criterion are higher for VR than for L. The reduced sample multiple correlations of VR and L with GPA produces an increase in "r" for both males and females.

The Population

The population of the study was arbitrarily selected with two primary factors under consideration 1) the availability of certain testing data, and 2) the apparent range of socio-economic groupings represented in the school constellation. To gain background information for making decisions about the first factor above, a survey of high schools in the 100 largest populated cities was made to determine the nature of their testing programs.[17] On the basis of the survey and the obvious heterogeneity in socio-economic class composition, nine schools in eight Michigan cities having ninth grade DAT raw scores available on their current tenth grade class were selected and asked to cooperate in the study. All agreed.

A further consideration was the availability of a second aptitude test. Originally, the plan was to use one administered in sixth or seventh grade. However, it was found that the elementary school data available to the high schools was not sufficiently comprehensive to allow use of these tests. Therefore, because one school had tenth grade CDMM scores available, it was decided to administer the CDMM to the other schools.

The population was the 4200 students representing all of the tenth grade males and females in the nine participating schools. Tenth grade was chosen because the motivational instruments were to be administered in the eleventh grade and it was necessary to select the students when the CDMM could still be administered. This selection procedure had the added advantage of permitting the use of the summer period to collect grades on ninth and tenth grade subjects.

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[17] Copies of a summary of the survey findings are available on request from the author.

The Sample

Using the two stage regression model described previously (supra, p. 23) samples of over- and under-achievers were selected from the 4200 students. The initial goal was to identify samples of 100 each of eight subcategories as illustrated in Table 2.2. However, because of a too conservative estimate of the population required to identify 800 over- and under-achievers, the actual samples fell short of the original projection.

To select the sample, separate regression equations were built for each of the nine schools on randomly drawn samples of 100. Furthermore, all analyses were done separately for each sex. The separate analysis became necessary when during the course of the analytic procedures, it became apparent that each school had a separate grading milieu which had to be considered. A generalized regression formula for all of the nine schools would have resulted in extremely disproportionate representation in the subcategories, i.e. one school would have contributed a disproportionate number of over-achievers and another a disproportionate number of under-achievers. Several alternative solutions were entertained such as using a normalizing transformation but the use of separate-school regression equations appeared to provide the most equitable selection approach.

Sample Size Attained

The number of over- and under-achievers used in the analysis for each of the six experimental instruments is summarized in Table

Table 2.2

Projected Sample Size of Over- and Under-Achievers

Sample		Validation	Cross-Validation
Males	Over-Achievers	100	100
	Under-Achievers	100	100
Females	Over-Achievers	100	100
	Under-Achievers	100	100

2.3. The number in the subgroups vary because of a number of factors contributing to incomplete information: absence, errors in response, lack of test cooperation, and improper identification. As would be expected, the greatest loss from time of selection to test administration was in the number of male under-achievers.

Statistical Analysis

Three major types of analyses were conducted on the data: 1) estimates of item and test validity, 2) estimates of test reliability, and 3) factor analysis of the valid items.

Item and Scale Validity Analysis

Each item of the experimental instruments and the personal data information was analyzed by the chi square model. Responses of

Table 2.3

Number of Over- and Under-Achievers Used of Item Analysis of Each Experimental Instrument

Instrument		Validation		Cross-Validation	
		Males	Females	Males	Females
Word Rating List	Over-Achiever	87	95	80	96
	Under-Achiever	62	84	69	86
Perceived Parental Attitude Inventory	Over-Achiever	81	90	77	88
	Under-Achiever	65	86	68	85
Preferred Teacher Characteristics Scale	Over-Achiever	87	96	83	91
	Under-Achiever	69	89	69	84
Generalized Situational Choice Inventory	Over-Achiever	88	95	83	94
	Under-Achiever	66	88	71	85
Human Trait Inventory	Over-Achiever	81	91	76	87
	Under-Achiever	69	85	68	84
Preferred Job Characteristics Scale	Over-Achiever	95	95	80	91
	Under-Achiever	62	90	69	87

over- and under-achievers to each of the two alternatives for each item were entered in a two-by-two contingency table. Chi square values were calculated on a high speed electronic computer (MISTIC) at Michigan State University, by punching the observed frequencies on computer tape. The K6m program was used for this analysis.

Originally, the intention was to set alpha at the .20 level for item validation and cross-validate the significant items at the .10 level. The more stringent cross-validation significance level was used to minimize rejection of the Null Hypotheses when they should have been accepted (Type I error). For two of the experimental instruments (HTI and WRL), orders were confused and more conservative .10 level was used for both validation and cross-validation.

To assess the validity of the items identified by the chi square values, a series of uni- and multi-variate analyses were calculated (using the K11 MISTIC program) in order to obtain estimates of the relationship between the various scales and sub-scales with the grade point criteria. Multiple-regression and correlation analyses were done using the K16m program on MISTIC to assess the effect of adding variables to the basic aptitude predictor in estimating grade point average. The beta weights were tested for significance using a predetermined .05 level of significance.

Reliability Analysis

Internal consistency reliability estimates were obtained by Hoyt's analysis of variance method for all experimental instruments (total and sub-scales) and grade point criterion.[18]

Factor Analysis

A number of methods for factoring a matrix are available. However, only the principal axis solution is mathematically precise.[19] This method extracts all of the variance presented by an intercorrelation. Other methods leave residual correlations. Because of its precision, the principal axis solution was used.

All factor analysis was done on the total over- and under-achiever groups. That is, the over- and under-achiever responses were treated as one sample. The decision to use the combined extreme discrepant achievement groups was based on the assumption that derived factors would more dramatically extract the differences in the two samples than if a general sample had been used.

Intercorrelations (phi-coefficients) among item responses for both the male and female samples were determined by use of the K2 program on MISTIC. The matrix of item intercorrelations was punched on tape and verified. The diagonals were given the value of one in order for the extraction to account for all possible variance. The factor generated intercorrelation was checked against the empirically derived one. Theoretically, it is necessary for each factored item produced by the product moment to be within ±.19 of the empirical item results.

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[18] Cyril H. Hoyt, "Test Reliability Estimated by Analysis of Variance," Psychometrika, 1941, Vol. 6, 153-160.

[19] Raymond B. Cattell, Factor Analysis, Harper and Brothers, New York, 1952, 328.

The mathematics of the reduction of the matrix into factors rests on the assumption that the total intercorrelation variance can be divided into independent sets. The independent sets of variance represent factors of the number of orthogonal dimensions of geometric space necessary to account for a matrix of intercorrelations. It is not required that the correlations be normally distributed, nor is it required that the population from which the correlations are obtained be normally distributed.[20]

The purpose of the factor analysis was to ascertain the structure of the motivational complex under study. Therefore, it was desirable that the factors be interpreted which involves some method of simplifying the factor loadings. One such method which aids in reduction is rotation. The quartimax analytical method of rotation of Neuhaus and Wrigley[21] was used because it achieves Thurstone's criteria with acceptable precision.[22]

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[20] *Ibid.*, 35-45, 129-187, and 328.

[21] J. O. Neuhaus and Charles Wrigley, "The Quartimax Method, An Analytical Approach to Orthogonal Simple Structure," *British Journal of Statistical Psychology*, 1954, Vol. 7, 89-91.

[22] Thurstone proposed that for the factor matrix, every item should have some zeros in its row (meaning that some of the other factors should not correlate with the item) and that every factor should have some zeros in its column indicating the factor does not affect all items. For a fuller discussion of this problem, see Cattell, *op. cit.*, 67-68.

Only those factors which had a sum of squares (Eigen value) in excess of one were rotated. The rotation was continued until at least three items loaded on a factor. Furthermore, items were interpreted with extreme caution if their highest loading on a factor fell below .35.

Data Collection Procedures

As previously stated, in all but one of the nine participating schools, the CTMM had to be administered under the direction of the project staff to the tenth grade students. This was done during the winter of 1959. During the summer of 1959, the cumulative record (CA39) of all students in the sample was photographed by the staff personnel. In the fall of 1959, the experimental instruments were administered to all eleventh grade students. The administration was done in large groups by proctors from the project and help from the staff of the participating schools. To expedite dispensing testing material, all supplies were packaged in large manila envelopes at Michigan State University prior to visiting the schools. Head proctors were provided with written instructions (a copy is reproduced in Appendix E) to be read to the students during the testing periods. The assistant proctors helped with clarification of directions overseeing the dispersion and replacement of supplies, locating and removing answer sheets from students who were obviously not cooperating and collecting the booklets and answer sheets from the students.

Summary

The hypotheses of the study were tested in a design which involved developing six experimental instruments (Word Rating List, Perceived Parental Attitudes Inventory, Preferred Teacher Characteristics Scale, Generalized Situational Choice Inventory, and Human Trait Inventory). In addition, questionnaires were constructed to gather background and occupational-educational status information on each student. Differential Aptitude Test and California Test of Mental Maturity scores were used as the aptitude criteria. Grade point averages were designated as the achievement criterion. Over- and under-achievers were selected using a two stage regression model which involved an attempt to select only those individuals who had a high probability of being correctly classified in either discrepant achievement group. Statistical analysis involved using chi square to select significant items, Hoyt's analysis of variance estimates of reliability of the items which held after cross-validation, correlational regression analysis to determine the validity of the items as a scale, and factor analysis to extend theory in describing the underlying structure of over- and under-achievers.

CHAPTER III

ANALYSIS OF THE PERSONAL DATA QUESTIONNAIRE

The Personal Data Questionnaire, interspersed on the following pages (yellow), was administered to 1) gather and verify certain demographic information, 2) explore the differences between over- and under-achievers' background, 3) determine the differences between over- and under-achievers' responses to direct questions about their academic activities and relationships with parents, and 4) gather information for several subsidiary studies conducted concomitantly with the major investigation. When appropriate, either a chi square, a "t", or a percentage difference[1] test of significance was calculated. For a few questions, simple frequency tabulations are presented.

The hypothesis tested was:

Null Hypothesis: There is no difference between over- and under-achievers' responses to questions in the Personal Data Questionnaire.

The questions which were used solely for sample identification or as a basis for other studies were not analyzed for this report.

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[1] Palmer O. Johnson, Statistical Methods in Research, Prentice-Hall, Inc., New York, 1949, 80.

Rate of School Progress (Questions 6 to 9)

The chi square analysis of the difference in responses to the question, "Have you ever skipped a grade or grades in school?" indicated that for neither males nor females ($X^2 = .166$ and 3.109, respectively) is there a greater number of over- and under-achievers reporting acceleration. On the other hand, a significantly greater number of under- than over-achievers for both sexes state that they had repeated a grade ($X^2 = 11.621$ and 10.078, respectively, $p < .01$). A significant difference in repetition but not in acceleration for the discrepant achievers is most likely a reflection of current conservatism in educational practice in advancing a child ahead of his age group.

In Table 3.1 a frequency tally is made of the number of discrepant achievers accelerated or failed for each grade level.[2] For males and females the largest number (28) were accelerated in kindergarten. For females, third grade constituted another level of acceleration activity (five, with two one-half grade promotions). The distinguishing characteristic of eighth grade acceleration was

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[2] For the male under-achievers who skipped kindergarten, one repeated grade two and another repeated grade four. Four males repeated more than one grade. One male over-achiever skipped kindergarten and repeated grade four. One female under-achiever skipped kindergarten and subsequently repeated one-half of third grade. Another female under-achiever skipped kindergarten but was later put back in kindergarten. A third under-achieving female reported skipping all of second grade as well as one-half of third. One female under-achiever repeated kindergarten and all of fourth grade.

PERSONAL DATA QUESTIONNAIRE

Instructions: Most of the questions below can be answered by circling a number, checking an answer, or writing in an answer or number. In those cases where you are asked to write out your own answer, space is provided for you to do so. Be sure to read each question carefully. Fill out this questionnaire completely!

DO NOT LEAVE OUT ANY INFORMATION

1. Name ____
(Last) (First) (Middle)

2. Sex (Circle the correct number)

1 .....Male

2 .....Female

3. Birthdate ______________________________
(Month) (Day) (Year)

4. School ______________________________

5. Present Grade in School ____________________

6. Have you ever skipped a grade or grades in school? (Circle the correct number)

1 .....Yes

2 .....No

7. If you have ever skipped a grade, what grade(s)? (Circle the grade(s))

Kindergarten 1 2 3 4 5 6 7 8 9 10 11

8. Have you ever repeated a grade or grades in school? (Circle the correct number)

1 .....Yes

2 .....No

9. If you have ever repeated a grade, what grade(s)? (Circle the grade(s))

Kindergarten 1 2 3 4 5 6 7 8 9 10 11

Questions about your older brothers. (If you have no older brothers, go on to the next page.)

10. How many older brothers do you have? (Circle the correct number)	11. What are the ages of your older brothers?	12. Highest grade they have completed in school	13. Kind of school marks they got (Check one for each older brother)				14. How well have you done in school as compared with them? (Check one for each brother)		
			A's	B's	C's	D's or E's	Better than	Same as	Not as good as
1									
2									
3									
4									
5									
6 or more									

15. If any of your older brothers have finished of left school, what are they doing now?

____

____

____

Table 3.1

Number of Male and Female Over- and Under-Achievers Accelerated or Failed for Grades K Through 11

Legend: O = Over-Achievers, U = Under-Achievers

	Accelerated				Failed				
Grade	Males		Females		Males		Females		Grade
	O	U	O	U	O	U	O	U	
K....	4	5	7,1*	11	1	2	1	4	....K
1....					2	3		2	1
2....	1,1*		1	1	3,1*	7,1*	1	6	2
3....		1	1	2,2*	2	6		3,1*	3
4....	1			1	1	9		3	4
5....					1		2,1*		5
6....			1,1*				1	1	6
7....						1			7
8....	2*	1*	3*	3*		1			8
9....						5			9
10....						5		1	10
11....									11

*Half grade only.

that all were half grade promotions. Because most of the Michigan schools are on annual promotion schedules, it is highly probable that eighth grade accelerations were for administrative purposes involving transfer students.

Failure rate appears to be highest for males and females at second, third, and fourth grade (30 males and 14 females). For male under-achievers, ninth and tenth grade constituted another period where much difficulty existed.

Number of Siblings and Their Rate of School Progress
(Questions 10 to 31)

Questions 10 through 31 concern the relation of the over- or under-achiever to his or her siblings. In Table 3.2 may be found a summary of the average number and age of various classifications of siblings for male and female discrepant achievers.

The data indicates that the male under-achiever has a larger average number of siblings than does the over-achiever ($z = 5.91$, $p < .01$). There is no significant difference in the average age of the male siblings but for both older ($t = 4.91$, $p < .01$) and younger sisters ($t = 4.23$, $p < .01$) the average age of these siblings is significantly higher for the male under-achiever. The male under-achiever tends to come from larger families than does the over-achiever ($z = 8.07$, $p < .01$). For the under-achiever the average age of the siblings (particularly sisters) is older ($t = 2.78$, $p < .01$).

Table 3.2

Average Number and Age of Older Brothers and Sisters and Younger Brothers and Sisters of Over- and Under-Achieving Males and Females

Legend: O = Over-Achievers, U = Under-Achievers

Sibling	Average Number and Age	Males					Females				
		O	U	z	df	t	O	U	z	df	t
Older Brothers	$\bar{x}$ number	.4881	.8162	5.91**			.4378	.5965	3.06**		
	$\bar{x}$ age	21.84	22.08		191	1.10	20.81	22.16		181	6.85**
Younger Brothers	$\bar{x}$ number	.5833	.7059	2.20*			.7514	.5438	-4.19**		
	$\bar{x}$ age	10.29	10.06		192	1.32	10.16	10.09		230	.42
Older Sisters	$\bar{x}$ number	.3512	.6324	4.87**			.5297	.4678	-1.92		
	$\bar{x}$ age	21.17	22.24		143	4.71**	21.13	22.95		176	8.31**
Younger Sisters	$\bar{x}$ number	.4464	.8015	6.10**			.6432	.4620	-3.51**		
	$\bar{x}$ age	9.37	10.17		182	4.23**	9.60	9.73		182	.72
Total	$\bar{x}$ number	1.87	2.96	8.07**			2.36	2.07	2.62**		
	$\bar{x}$ age	15.67	16.14		302	2.78**	15.42	16.23		354	3.51**

* = .05 level.
** = .01 level.

The female under-achiever in comparison to the over-achiever tends to have more older brothers ($z = 3.06$, $p < .01$), an equal number of older sisters ($z = -1.92$, $p > .05$), and fewer younger brothers ($z = 4.19$, $p < .01$) and sisters ($z = 3.51$, $p < .01$). The older brothers and sisters of the female under-achievers tend to be older than those of the over-achievers ($t = 6.85$ and 8.31, respectively, $p < .01$). There is no significant difference in the average age of younger siblings of discrepant achievers. The over-achieving female tends to come from a larger family ($z = 2.62$, $p < .01$) with more younger siblings than does her under-achieving counterpart who comes from a family where the average sibling age is greater than that of the over-achiever ($t = 3.51$, $p < .01$).

Questions 12, 18, 23, and 29 ask for the highest grade the siblings have completed in school. Of particular interest was the highest grade attained by older siblings. The chi square analysis was done on the responses of over- and under-achievers to the dichotomy, high school or less against some college or over. There was a significantly higher proportion of older brothers ($X^2 = 5.36$, $p < .05$) and sisters ($X^2 = 10.00$, $p < .01$) of male over-achievers going beyond high school than male under-achievers. For females, the Null Hypothesis was accepted for older sisters and brothers.

The kind of school grades the sibling was reported to have earned was solicited in questions 13, 19, 24, and 30. A summary of the average grades reported for the various classifications of siblings of discrepant achievers is reported in Table 3.3.

Questions about your younger brothers. (If you have no younger brothers, go on to the next page.)

16. How many younger brothers do you have? (Circle the correct number)	17. What are the ages of your younger brothers?	18. Highest grade they have completed in school	19. Kind of school marks they got (Check one for each younger brother)				20. How well have you done in school as compared with them? (Check one for each brother)		
			A's	B's	C's	D's or E's	Better then	Same as	Not as good as
1									
2									
3									
4									
5									
6 or more									

Questions about your older sisters. (If you have no older sisters, go on to the next page.)

21. How many older sisters do you have? (Circle the correct number)	22. What are the ages of your older sisters?	23. Highest grade they have completed in school	24. Kind of school marks they got (Check one for each older sister)				25. How well have you done in school as compared with them? (Check one for each sister)		
			A's	B's	C's	D's or E's	Better than	Same as	Not as good as
1									
2									
3									
4									
5									
6 or more									

26. If any of your older sisters have finished or left school, what are they doing now?

____

____

____

Questions about your younger sisters. (If you have no younger sisters, go on to the next page.)

27. How many younger sisters do you have? (Circle the correct number)	28. What are the ages of your younger sisters?	29. Highest grade they have completed in school	30. Kind of school marks they got (Check one for each younger sister)				31. How well have you done in school as compared with them? (Check one for each sister)		
			A's	B's	C's	D's or E's	Better than	Same as	Not as good as
1									
2									
3									
4									
5									
6 or more									

32. What is the name of a present high school teacher who you feel knows you best?

____

33. Which teacher have you ever had in school who you think knows you best?

____

34. Do you consider yourself a poor reader? (Circle the correct number)

1 .....Yes
2 .....No

35. Do you think that you have ever been slowed down in school because you are a poor reader? (Circle the correct number)

1 .....Yes
2 .....No

36. How would you rate your present study habits? (Circle the correct number)

1 .....Excellent
2 .....Good
3 .....Average
4 .....Not Very Good
5 .....Poor

37. How many hours a week do you study? (Circle one)

0 1 2 3 4 5 6 7 8 9
10 11 12 13 14 15
or more

Table 3.3

Average Reported Grades of Various Classifications of Siblings of Discrepant Achievers

Legend: O = Over-Achievers, U = Under-Achievers

Sibling	Males					Females				
	O	U	df	t	p	O	U	df	t	p
Older Brother	1.62	1.29	184	2.73	$<.01$	1.43	1.19	178	2.09	$<.05$
Younger Brother	1.64	1.33	152	2.31	$<.05$	1.72	1.49	184	1.85	--
Older Sister	1.91	1.77	143	1.07	--	1.83	1.34	162	4.26	$<.01$
Younger Sister	2.03	1.57	144	3.20	$<.01$	2.07	1.83	157	2.04	$<.05$

The male under-achievers reported significantly lower average marks for all of his siblings,with the exception of older sisters, than did the over-achiever. The female under-achiever reported significantly lower marks for all her siblings, with the exception of younger brothers, than did the over-achiever.

When asked how well they did in relation to their siblings (questions 14, 20, 25, and 31), the over-achiever in all cases reported a significantly high number of responses of doing "better than" compared to the combined "same as" and "not as good as" categories. (All eight chi square values of the two-by-two contingency tables for the various classifications of male and female over- and under-achievers for older and younger brothers and sisters were significant at the .01 level.)

Questions 15 and 26 concern the activities of the older brothers and sisters who left school. A frequency tally is made in Table 3.4 of the various reported activities.

For older brothers the most frequently mentioned activity is "work" with "service" ranking second. For older sisters the classifications are close to being equally divided between "housewife" and "work". The "more school" category, which is actually a miss-answer to the intent of the question, tended to be more frequently tallied by over-achievers. Only an extremely small proportion reported their older siblings doing "nothing".

Questions 32 and 33 were used for a subsidiary study and were not analyzed for this project.

Study Habits (Questions 34 to 37)

There was no significant difference in how male and female discrepant achievers viewed their reading ability (question 34, $X^2 = < 1$ and 1.782, respectively, $p > .05$). However, a significantly higher proportion of female under-achievers than over-achievers felt that they had been "slowed down in school" because of poor reading. (question 35, $X^2 = 5.959$, $p < .05$). There was no significant difference in the responses of the males to this question. Even though

Table 3.4

Frequency Tally of the Various Activities as Reported by Discrepant Achievers Carried On By Their Older Brothers and Sisters Who Had Left School

Legend: O = Over-Achiever, U = Under-Achiever

Activity	Males		Females	
	O	U	O	U
Older Brothers				
Service	3	13	9	19
Work	26	33	35	43
More School	6	2	7	2
Nothing	0	1	3	2
Older Sisters				
Housewife	10	20	29	30
Work	12	28	31	14
More School	4	2	6	3
Nothing	1	1	0	1

neither of the sexes felt that reading was a current problem, females felt it had been in the past. It may be that when a female is a poor reader in school she becomes aware of the problem and does not suppress it, or that female under-achievers report school problems more accurately than do male under-achievers. When asked to rate their present study habits (question 36), the difference between the responses of over- and under-achievers is marked. Most male and female over-achievers rate their "present study habits" as good or excellent while under-achievers rate theirs as average, not very good, or poor ($X^2 =$ 52.36 and 59.28, respectively, $p < .01$).

In response to question 37, male and female over-achievers report a significantly higher average number of hours devoted to study per week. The averages and tests are summarized in Table 3.5. Male and female over-achievers report an average of approximately 11 and 12 hours of study respectively, per week. Under-achieving males report an average of almost eight hours and females slightly over ten hours.

Extra-Curricular Activities (Question 38)

The frequency with which over- and under-achievers participated in a variety of activities was recorded in question 38 and summarized in Table 3.6.

The average number of activities reported for the various achieving classifications was male over-achievers (2.48), male under-achievers (1.61), female over-achievers (2.74) and female under-achievers (1.73). The difference in proportion of activities was significantly higher for both male and female over-achievers than for under-achievers ($z = 5.69$ and 5.44, respectively, $p < .01$).

38. **Circle** the extra-curricular or after-school activities that you regularly participate in.

1. Art Club
2. Band
3. Baseball
4. Basketball
5. Bible Club
6. Biology Club
7. Boys Athletic Club
8. Cheerleading
9. Debate Team
10. Drama Club
11. Football
12. Foreign Language Club
13. Future Farmers
14. Future Homemakers
15. Future Nurses Club
16. Future Teachers Club
17. Girls Athletic Club
18. Glee Club
19. Golf
20. High-Y
21. Library Club
22. Modern Dance Club
23. Orchestra
24. Photography or Camera Club
25. Rifle or Pistol Club
26. School Newspaper
27. Student Council
28. Swimming Club
29. Tennis
30. Track
31. Varsity Club
32. Wrestling
33. Y - Teens
34. Yearbook

Others (Write In) ____________________

____

____

____

____

39. What do you plan to do after you leave school? (Circle the number)

1 .....Go to a trade school
2 .....Go to a business school
3 .....Go to a four-year college
4 .....Go to a two-year college
5 .....Find a job
6 .....Don't know
7 .....Other plans, what are they ______________

____

40. If you had a personal problem, with whom would you talk it over? (Circle the number)

1 .....Mother
2 .....Father
3 .....Relative
4 .....Clergyman
5 .....School Counselor
6 .....Doctor
7 .....Other (Write in) ______________

41. Do you have any physical handicap, limitation or nervous disorder? (Circle the number)

1 .....Yes
2 .....No

If yes, please describe it ______________

____

Table 3.5

Significance of the Difference Between the Average Number of Hours of Study Reported by Male and Female Discrepant Achievers

Sample		Average Hours Reported	df	t	p
Males	Over-Achievers	11.28	274	24.22	.01
	Under-Achievers	7.78			
Females	Over-Achievers	12.02	311	14.43	.01
	Under-Achievers	10.15			

Table 3.6

Frequency Tally of the Various Activities Discrepant Achievers Report Being Involved In

Legend: O = Over-Achievers, U = Under-Achievers

Activity	Males O	Males U	Females O	Females U
1. Art Club	1	2	2	4
2. Band	14	10	10	4
3. Baseball	26	20	2	3
4. Basketball	25	16	2	3
5. Bible Club	4	2	13	9
6. Biology Club	4	4		
7. Boys Athletic Club	5	2		
8. Cheerleading	3	2	9	1
9. Debate Team	2	1	5	
10. Drama Club	2	2	11	10
11. Football	24	25		1
12. Foreign Language Club	20	6	38	7
13. Future Farmers	3	3		
14. Future Homemakers			4	1

(Continued)

Table 3.6 (Cont.)

Activity	Males		Females	
	O	U	O	U
15. Future Nurses Club			3	7
16. Future Teachers Club	1	1	13	6
17. Girls Athletic Club			39	13
18. Glee Club	10	2	24	20
19. Golf	9	4	2	1
20. High-Y	3	3		
21. Library Club	1	1	6	5
22. Modern Dance Club	1		7	3
23. Orchestra	9	2	8	4
24. Photography or Camera Club	2	2	1	1
25. Rifle or Pistol Club	8	9	2	
26. School Newspaper	2	4	4	3
27. Student Council	9	3	14	5
28. Swimming Club	10	8	10	4
29. Tennis	14	5	9	4
30. Track	16	20		
31. Varsity Club	12	4		
32. Wrestling	8	7	1	
33. Y-Teens			32	8
34. Yearbook	1			2
35. Archery Club		2		
36. Boat Club	1	2	1	
37. Bowling	1	5	5	3
38. Business Staff	4			
39. Civil Air Patrol		2		
40. Class Congress	4		1	
41. Community Club	2	1	1	3
42. Fencing	1	1	1	
43. 4-H		1	3	1
44. Government in Action	2		2	3
45. Hockey	1	1		
46. Honor Society	5		4	
47. Hot Rod Club	1	3		
48. Junior Achievement	5	2	16	13
49. Key Club	2			
50. Latin Guild			3	
51. Masonic Activities	4	1	8	4
52. Music Lessons	5		4	1
53. Pep or Booster Club			23	8
54. Radio Club	3	1		

(Continued)

Table 3.6 (Cont.)

Activity	Males O	Males U	Females O	Females U
55. Scouts	6	2	2	
56. Senate Fine Arts Club			9	
57. Service Club			3	2
58. Skiing	1		1	1
59. Skin Diving Club		2		
60. Ushers Club		1	6	6
61. Young Republican Club	1		1	
62. Youth Group (Church)	22	6	43	27
63. Miscellaneous	7	8	1	

Plans After Leaving School (Question 39)

The chi square analysis of question 39 comparing the plans for further school or training (responses 1, 2, 3, or 4) with no plans for further education (responses 5 or 6) indicated for both sexes ($X^2 = 26.03$ and 13.58, $p < .01$ for males and females, respectively) a higher number of over-achievers planning to continue some form of formal learning. (Answers to response 7 were classified in one of the above two categories.)

Identification of Confidants (Question 40)

Two separate analyses were done with the responses to question 40, "If you had a personal problem, with whom would you talk it over?"

First, for those indicating either mother or father, a test was made to determine which parent over- or under-achievers chose to discuss their personal problems with more frequently. A higher number of both males and females chose their mothers but there was no significant difference between over- and under-achiever's selection of either parent. Secondly, the responses were classified into whether they sought help from their family (answers 1, 2, or 3) or elsewhere (4 through 7) in order to determine the role of the family unit in personal problem help. Both male ($X^2 = 19.1$, $p < .01$) and female ($X^2 = 4.95$, $p < .05$) over-achievers report that they would go to their families while under-achievers would go elsewhere. This finding was particularly evident for males.

Question 41 was asked in order that individuals who might not be able to read the questions, comprehend instructions, or mark answer sheets would be identified. Fifty-four of the discrepant achievers answered that they had physical handicaps but all of them were of the type which would not necessarily increase the error of measurement, e.g. wears glasses, has leg brace, or being treated for skin condition.

Automobile Ownership (Question 42)

The chi square analysis of question 42 which asked if the student had a car available for personal use whenever he wanted it indicated no significant difference in the proportion of discrepant achievers answering either yes or no ($X^2 = < 1$).

42. Do you own or have a car available for your personal use whenever you want it? (Circle the number)

1 .....Yes

2 .....No

43. If you have a job during the school year, how many hours per week do you work regularly for pay? (Circle the number)

1 .....None

2 .....1 to 5

3 .....6 to 10

4 .....11 to 15

5 .....16 to 20

6 .....21 or more

44. Present family origins. (Circle one)

1 .....Native born white

2 .....Foreign born white

3 .....Native born Negro

4 .....Foreign born Negro

5 .....European descent

6 .....Asian descent

7 .....Other (Write in) ____________________

45. Have you lived in the United States all of your life? (Circle one)

1 .....Yes

2 .....No

46. If you have not lived in the United States all of your life, how many years have you lived here? ____________

47. With which of the following older adults are you now living? (Circle the number in front of your answer)

1 .....Mother only
2 .....Father only
3 .....Mother and Father
4 .....Mother and Stepfather
5 .....Father and Stepmother
6 .....Foster parents
7 .....Other relatives
8 .....Other people, not relatives

48. How many years have you lived with the person or persons you indicated in question No. 47?

____

49. Are both of your parents living now? (Circle the correct number)

1 .....Yes, both are living
2 .....No, father only is living
3 .....No, mother only is living
4 .....No, neither are living

50. What is your religious background? (Give denomination if possible)

____________________ Father
____________________ Mother
____________________ Yours

Hours of Work (Question 43)

Neither sex among over- or under-achievers reported working a greater number of hours per week when response number one "none", was compared to responses two through six ($X^2 = < 1$).

Family Relations (Questions 44 to 53)

Questions 44, 45, and 46 were used to identify minority groups where the theory of Chapter II was inappropriate. Furthermore, because the assumption was made that academic motivation is learned, it was important not to use foreign born students because their unique acculturation might increase the error of measurement.

Questions 47, 48, and 49 were intended primarily to describe the nature of the family unit. In the analysis of the Perceived Parental Attitudes Inventory this factor was important because the underlying assumption of the survey was that the student had experienced the child rearing practices he was rating. Only students coming from intact homes were used and children of foster or stepparents were only included if they indicated in question 48 that they had been with the adults for all but one year of their lives. For analysis of the other tests, the sample was not reduced in this manner. A frequency tally of the adult or adults with whom the discrepant achievers indicated living is made in Table 3.7.

Table 3.7

Frequency Tally of Living Units of Discrepant Achievers

Legend: O = Over-Achiever, U = Under-Achiever

Adult(s)	Males O	Males U	Females O	Females U
Mother	7	10	13	12
Father	1	3	1	2
Mother and Father	154	114	163	140
Mother and Stepfather	7	9	10	10
Father and Stepmother	2	1	2	5
Foster Parents	0	0	0	1
Other Relatives	2	2	2	4

By far the most frequently indicated living unit was with mother and father. Living with either mother, or with mother and stepfather were the next most frequently indicated living unit; however, the selection of either of these two responses was small in proportion to the mother-father response. All other frequencies were extremely small.

Question 48 was not analyzed beyond inspection for sample refinement.

There was no significant difference between the number of over- or under-achievers reporting parents living or dead. (Response number one was tested against combined two, three, and four for males and females. Both chi squares were insignificant.)

The parent's and discrepant achiever's religion is solicited in question number 50. Analysis was made for each sex and classification of achievement of the difference between 1) those affiliated compared to those not affiliated with a church, 2) Catholic compared to Protestant church affiliation, and 3)fundamentalists compared to non-fundamentalists Protestant sects. Each analysis was made for the father's, mother's, and individual's religion separately. The data and analysis results are summarized in Table 3.8.

The results of the affiliation and non-affiliation classification analysis indicated exactly opposite findings for males and females. For males more over-achievers and under-achievers reported their mother and themselves affiliated with a church ($X^2 = 3.84$ and 3.89, respectively, $p < .05$). No difference was found in church affiliation for the father's of discrepant male achievers. For females the only significant difference between affiliation and non-affiliation for discrepant achievers was found in the fathers' religion ($X^2 = 4.18$, $p < .05$) with a higher proportion of under-achieving females indicating fathers without affiliations.

The analysis contrasting Catholic compared to Protestant church membership revealed no discrepant achiever difference for either sex for parents or self except for mothers of females.

Table 3.8

Chi Square Analysis of Various Religious Affiliations of Discrepant Achievers and Their Parents

Legend: O = Over-Achiever, U = Under-Achiever, M = Males, F = Females

Comparison Made	Sex	Father's Religion O	Father's Religion U	Chi Square	p	Mother's Religion O	Mother's Religion U	Chi Square	p	Achiever's Religion O	Achiever's Religion U	Chi Square	p
Affiliated	M	156	116			161	120			162	121		
Non-Affiliated	M	18	24	2.88	ns	13	20	3.84	<.05	12	19	3.89	<.05
Affiliated	F	173	147			183	7			179	164		
Non-Affiliated	F	17	28	4.18	<.05	163	12	1.86	ns	11	11	<1	ns
Catholic	M	46	27			40	30			42	29		
Protestant	M	88	72	1.37	ns	100	72	<1	ns	100	72	<1	ns
Catholic	F	32	35			33	44			30	43		
Protestant	F	117	90	1.56	ns	126	95	4.59	<.05	125	95	2.53	ns
Fundamentalist	M	5	5			4	5			4	5		
Non-Fundamentalist	M	55	42	<1*	ns	62	42	<1*	ns	65	43	<1*	ns
Fundamentalist	F	6	5			6	5			5	3		
Non-Fundamentalist	F	78	58	<1	ns	81	65	<1*	ns	86	63	<1*	ns

* Yates correction applied.

Here a higher proportion of female over-achiever's mothers were Protestant and under-achiever's mothers were Catholic.

A final analysis was made between those religions which profess a literal interpretation (fundamentalist) of the Bible and those which do not. Unfortunately the number of individuals in the fundamentalist classification was small in all cases. The chi square values were insignificant for parents and self for all classifications of discrepant achievers.

In questions 51 through 53 the discrepant achievers' focus of identity is sought. For question 51, in which the students were asked with whom they would like to live if they had the choice, chi square analyses were done two ways. First, for those choosing either mother or father, a test was made to determine if one parent would be most frequently chosen by over- or under-achievers. The results were not significant ($X^2 = 2.59$ and < 1, respectively). Secondly, responses one and two were combined and contrasted to all others to determine if the choice would center on the parents or on others. For both males and females the over-achiever chooses at least one of his parents in preference to other relatives significantly more frequently than does an under-achiever ($X^2 = 7.59$ and 11.17, $p < .01$).

For analysis, the answers to question 52 "Which parent do you most closely resemble?" were dichotomized combining responses one and two for fathers and three and four for mothers. For both males and females the difference between over- and under-achiever's responses was not significant ($X^2 = 2.19$ and < 1).

Apparently, according to the responses to question 53, the over-achievers do not view themselves as a favorite of either father or mother more frequently than do under-achievers ($X^2 = 1.23$ and < 1 for males and females, respectively). When responses to choosing either father, mother, or both were grouped and compared to choosing neither, the difference between discrepant achiever's answers was again not significant.

Family Discipline Patterns (Questions 54 to 57)

In question 54 an attempt was made to evaluate the degree of strict discipline. Chi square analysis was done by grouping the first two responses which represent fairly strict discipline and contrasting the results against a compilation of the remaining three responses which represent lack of strictness to inconsistency. For both males and females the difference was significant ($X^2 = 15.65$ and 7.56, respectively, $p < .01$) with the over-achiever reporting more strict discipline experiences than the under-achiever.

When the first four responses were grouped and compared to the last to assess the difference between consistency and inconsistency in discipline, the differences for both sexes were significant with the under-achiever reporting discipline inconsistency more frequently than the over-achiever ($X^2 = 21.828$, $p < .01$ and 5.006, $p < .05$).

Even though under-achievers reported less strict discipline, according to the responses to question 55 they felt that they had

51. If you had your choice of living with anyone you wished, which of the following would you choose? (Circle the number)

1 .....Father
2 .....Mother
3 .....Older Brother
4 .....Older Sister
5 .....Younger Brother
6 .....Younger Sister
7 .....Uncle
8 .....Aunt
9 .....Grandmother
10 .....Grandfather
11 .....Other (Write in) ____________________

52. Which parent do you most closely resemble? (Circle the number)

1 .....Resemble father a great deal
2 .....Resemble father somewhat
3 .....Resemble mother a great deal
4 .....Resemble mother somewhat

53. I am a favorite of: (Circle the number)

1 .....My father
2 .....My mother
3 .....Both my parents
4 .....Neither of my parents

54. Type of discipline you have had in your home. (Circle the number)

1 .....Very strict

2 .....Firm but not harsh

3 .....Usually allowed to have my own way

4 .....Had my own way about everything

5 .....Inconsistent (Sometimes strict, sometimes easy)

55. Amount of discipline you have had. (Circle the number)

1 .....Punished severely for every little thing

2 .....Punished frequently

3 .....Punished occasionally

4 .....Never punished

56. When you did something wrong, how did your parents treat you? (Circle more than one if necessary)

1 .....Use physical punishment, such as spanking, etc.

2 .....Took away privileges

3 .....Scolding

4 .....Talked it over with me

57. Which parent was the one who usually was in charge of discipline in your home? (Circle the number)

1 .....Father only

2 .....Mother only

3 .....Father and Mother

58. How do your parents feel about the grades you get in school? (Circle the number)

1 .....Very well satisfied

2 .....Satisfied

3 .....Rather Dissatisfied

4 .....Dissatisfied

greater amounts of discipline than did their over-achieving counterparts ($X^2 = 6.08$, $p < .05$ and 8.73, $p < .01$).

Further clarification of the type of discipline was asked for in question 56. The chi square analysis was done grouping the first three responses which implied a certain lack of communication between parent and child and compared this to the fourth response which indicated some form of communication. For males and females, the differences between over- and under-achievers' answers were significantly different ($X^2 = 12.45$, $p < .01$ and 5.04, $p < .05$, respectively) with the over-achiever indicating parents more frequently willing to rely on discussing a problem.

As for which parent discharges the discipline (question 57), neither father, mother, nor father and mother together are more frequently indicated by either male or female over- and under-achievers ($X^2 = 2.561$, $df = 2$, $p < .05$ for males, $X^2 = 4.684$, $df = 2$, $p < .05$ for females).

Parents Satisfaction With School Achievement (Question 58)

The students were asked in question 58 to rate their parents' satisfaction with school grades. For males and females the over-achiever most frequently reported parents "satisfied" or "very well satisfied" while the under-achiever most frequently reported parents "rather dissatisfied" or "dissatisfied" ($X^2 = 72.37$ and 107.31, $p < .01$ for males and females, respectively).

Likes and Ease of School Subjects (Question 59)

Students were asked to rate which of their school subjects were their favorites, most disliked, easiest, and hardest. In Table 3.9 the rating frequencies are tallied with chi square tests of significance on those combinations which had either a row or a column adding to twelve or more. For discussion purposes the order of the subjects has been changed from that used in the questionnaire.

Language Arts

For males, under-achievers disliked speech and foreign languages significantly more frequently than did over-achievers ($X^2 = 5.53$, $p < .05$, and 9.62, $p < .01$, respectively). For these same males, English was considered significantly harder by under-achievers ($X^2 = 5.57$, $p < .05$).

Significantly more female over-achievers liked foreign languages than did female under-achievers ($X^2 = 17.81$, $p < .01$). The over-achieving female tended to find English her easiest subject and the under-achieving female tended to find foreign languages her hardest subject ($X^2 = 5.49$, $p < .05$, and 24.17, $p < .01$).

Fine Arts

For the few males who rated Orchestra, the trend was for over-achievers to like it and under-achievers to dislike it (X^2 =

59. Information about your school subjects. Go through the list of subjects four times. First choose your favorite subjects, second choose which you dislike most, third choose those which are easiest for you, and finally choose those which are hardest for you. Make a check mark (✓) for each choice.

Subject	Favorite	Dislike	Easiest	Hardest
1. English				
2. Literature				
3. Speech				
4. Drama				
5. Journalism				
6. Foreign Languages				
7. Algebra				
8. Geometry				
9. General Science				
10. General Math				
11. Biology				
12. Chemistry				
13. Physics				
14. History				
15. Government				
16. Geography				
17. Economics				
18. Home and Family Living				
19. Shorthand				
20. Typing				
21. Bookkeeping				
22. Office Practices				
23. Art				
24. Clothing				
25. Printing				
26. Mechanical Drawing				
27. Metal Shop				
28. Wood Shop				
29. Machine Shop				
30. Auto Mechanics				
31. Physical Education				
32. Band				
33. Orchestra				
34. Choir				
Other (Write in) ______				
Other (Write in) ______				

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Table 3.9

Reaction of Discrepant Achievers to School Subjects

Legend: O = Over-Achievers, U = Under-Achievers, F = Favorite, D = Dislike, E = Easiest, H = Hardest

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
Language Arts																	
English	O	37	65			57	61			83	46			96	40		
	U	27	79	2.85	ns	34	70	5.57	<.05	78	54	<1	ns	63	49	5.49	<.05
Speech	O	28	32			23	24			34	26			28	24		
	U	10	32	5.53	<.05	9	21	2.71	ns	33	27	.034	ns	28	19	<1	ns
Journalism	O	6	8			6	5			15	7			11	3		
	U	1	13	3.05*	ns	1	10	3.35*	ns	10	9	1.04	ns	8	10	2.52*	ns
Foreign Languages	O	36	39			20	52			67	24			40	40		
	U	6	29	9.62	<.01	7	17	<1	ns	26	39	17.81	<.01	7	56	24.17	<.01
Fine Arts																	
Literature	O	26	36			25	25			53	41			45	33		
	U	20	28	<1	ns	21	23	<1	ns	56	19	5.09	<.05	52	44	<1	ns

*Yates correction applied.

(Continued)

Table 3.9 (Cont.)

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
Drama	O	3	7			4	4			13	3			10	4		
	U	5	10	<1*	ns	2	7	--	--	8	8	2.22*	ns	9	4	<1*	ns
Art	O	18	7			18	4			27	12			17	9		
	U	20	6	<1	ns	18	5	<1*	ns	46	10	2.16	ns	40	11	1.53	ns
Band	O	17	5			19	4			21	6			16	4		
	U	14	11	2.36*	ns	13	5	<1*	ns	10	5	--	--	7	5	<1*	ns
Orchestra	O	12	6			9	3			12	3			11	2		
	U	2	10	5.36*	$<.05$	4	5	<1*	ns	6	8	2.81*	ns	6	6	2.03	ns
Choir	O	17	5			18	4			44	1			34	2		
	U	8	8	1.97	ns	7	3	<1	ns	45	4	1*	ns	44	3	<1	ns
Mathematics & Science																	
Algebra	O	96	21			66	39			76	32			52	51		
	U	37	31	16.27	$<.01$	20	40	13.33	$<.01$	22	54	30.75	$<.01$	12	64	22.91	$<.01$
Geometry	O	70	24			46	36			39	45			28	60		
	U	23	30	14.08	$<.01$	16	36	8.21	$<.01$	14	23	<1	ns	9	34	1.69	ns

*Yates correction applied.

(Continued)

Table 3.9 (Cont.)

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
General Science	O	23	12			35	4			25	24			28	14		
	U	28	10	<1	ns	22	8	2.14*	ns	14	15	<1	ns	16	8	<1	ns
General Math	O	67	17			30	5			31	17			39	6		
	U	24	11	1.71	ns	30	10	1.34	ns	35	26	<1	ns	47	16	2.36	ns
Biology	O	31	8			42	25			57	20			28	34		
	U	39	19	1.75	ns	28	24	1.00	ns	44	26	2.13	ns	32	31	<1	ns
Chemistry	O	73	14			31	46			34	13			8	42		
	U	21	16	11.63	<.01	4	28	8.00	<.01	11	11	3.30	ns	0	22	2.51	ns
Physics	O	14	5			6	9			7	6			3	4		
	U	3	12	9.66	<.01	2	8	<1	ns	5	11	<1*	ns	6	12	<1	ns
Social Sciences																	
History	O	74	35			51	42			69	64			54	67		
	U	49	50	7.26	<.01	37	47	2.05	ns	52	71	2.37	ns	32	78	5.95	<.05
Government	O	9	6			5	5			9	9			6	10		
	U	2	15	4.68*	<.05	2	12	2.08*	ns	5	9	<1	ns	4	10	<1*	ns

*Yates correction applied.

(Continued)

Table 3.9 (Cont.)

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
Geography	O	13	23			22	12			19	25			20	17		
	U	12	23	<1	ns	15	10	<1	ns	13	22	<1	ns	15	19	<1	ns
Economics	O	1	5			2	2			3	3			8	3		
	U	0	9	--	--	0	4	--	--	8	8	--	--	7	3	<1*	ns
Home and Family Living	O	0	0			0	0			10	0			9	2		
	U	1	7	--	--	2	3	--	--	13	9	2.17	ns	12	6	<1	ns
Practical Arts																	
Clothing	O	1	4			2	2			37	11			30	7		
	U	0	8	--	--	1	5	--	--	31	13	<1	ns	34	5	<1*	ns
Industrial Arts																	
Printing	O	5	4			5	4			7	2			6	1		
	U	6	5	--	--	7	5	<1*	ns	5	3	--	--	2	5	--	--
Mechanical Drawing	O	46	11			35	10			1	4			1	3		
	U	41	12	.19	ns	30	13	<1	ns	2	6	--	--	1	5	--	--

*Yates correction applied.

(Continued)

Table 3.9 (Cont.)

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
Metal Shop	O	24	4			19	5			2	6			0	2		
	U	23	10	2.20	ns	21	5	<1	ns	1	6	--	--	1	5	--	--
Wood Shop	O	31	5			22	5			1	7			1	2		
	U	36	6	<1*	ns	29	4	<1	ns	4	7	--	--	3	6	--	--
Machine Shop	O	9	4			5	4			1	7			0	2		
	U	17	8	<1*	ns	16	4	<1	ns	4	7	--	--	0	5	--	--
Auto Mechanics	O	21	1			13	3			2	5			1	2		
	U	42	4	<1	ns	25	9	<1	ns	1	5	--	--	1	4	--	--
Physical Education	O	75	22			75	16			75	39			80	9		
	U	68	14	<1	ns	67	5	4.06	<.05	64	35	1	ns	73	10	<1	ns
Business																	
Shorthand	O	2	5			1	3			31	8			17	15		
	U	0	8	--	--	1	6	--	--	22	12	1.99	ns	10	26	5.58	<.05

*Yates correction applied.

(Continued)

Table 3.9 (Cont.)

Subject		Males								Females							
		F	D	Chi Square	p	E	H	Chi Square	p	F	D	Chi Square	p	E	H	Chi Square	p
Typing	O	22	12			18	9			87	10			73	15		
	U	24	15	<1	ns	16	15	1.34	ns	90	20	2.58	ns	72	23	1.33	ns
Bookkeeping	O	3	4			4	2			48	8			36	12		
	U	9	11	<1*	ns	6	10	<1*	ns	37	4	<1*	ns	29	26	5.46	<.05
Office Practice	O	3	2			3	2			6	1			7	0		
	U	0	6	--	--	1	4	--	--	17	4	<1*	ns	12	3	--	--

*Yates correction applied.

5.36, $p < .05$). No differences were noted for the male ratings of easiest and hardest for the fine arts.

A higher proportion of female under-achievers reported literature their favorite subject than did over-achievers ($X^2 = 5.09$, $p < .05$). The easiest-hardest findings were identical to those for males with no significant differences noted.

Mathematics and Science

A higher proportion of male over-achievers than male under-achievers reported algebra, geometry, chemistry, and physics their favorite subjects ($X^2 = 16.27$, 14.08, 11.63, and 9.66, respectively, $p < .01$ for all tests). For physics the under-achiever reported a disproportionate large number of dislikes. Under-achieving males felt that algebra, geometry, and chemistry were their hardest subjects more often than did over-achievers ($X^2 = 13.33$, 8.21, and 8.00, respectively, $p < .01$ for all tests).

For females the over-achievers liked and the under-achievers disliked algebra in almost opposite proportions ($X^2 = 30.75$, $p < .01$). The under-achieving female tended to find algebra her hardest subject ($X^2 = 22.91$, $p < .01$).

Social Sciences

Over-achieving males indicated that they liked history and under-achievers indicated that they disliked government with significant disproportion ratings ($X^2 = 7.26$, $p < .01$ and 4.68, $p < .05$).

There were no significant differences in male ratings of easiest and hardest for social sciences.

Females tended to rate likes of social science subjects with no significant differences. However, significantly more of the female under-achievers reported history was their hardest subject ($X^2 = 5.95$, $p < .05$).

Home and Family Living

For neither males nor females were any significant differences noted in either likes or ease ratings of the home and family living courses.

Practical Arts

The only subject included under practical arts was Clothing. Obviously, this is an oversight because of the many courses which could have been rated under this classification. No significant differences were found for either males or females for the one rated.

Industrial Arts

As expected, industrial arts was rated mostly by males. In the main, males rated this as their favorite and easiest subject matter area. No significant differences between over- and under-achievers' ratings were noted.

Physical Education

For both males and females no significant differences were noted between discrepant achievers in rating physical education except that male over-achievers tended to find this one of their hardest subjects ($X^2 = 4.06, p < .05$).

Business

Male discrepant achievers indicated no significant proportional difference in either likes or difficulty of business subjects. For females no differences were noted for likes, but under-achievers felt shorthand was one of their hardest subjects proportionately more frequently than did over-achievers ($X^2 = 5.58, p < .05$). Furthermore, over-achievers felt that bookkeeping was one of their easiest subjects proportionately more often than under-achievers ($X^2 = 5.46, p < .05$).

Summary

Responses of over- and under-achievers to a detailed questionnaire were analyzed for differences in order to enhance understanding of the sample studied. The major findings are as follows:

1. Under-achievers repeated grades more frequently than over-achievers. There was no difference in acceleration rate.

2. Male under-achievers and female over-achievers tend to come from larger families than do their discrepant achiever counterparts. However, both male and female under-achievers tend to have siblings who are, on the average, older than the siblings of over-achievers.
3. With a few exceptions, the over-achievers report doing better in school than their siblings.
4. No difference was found in how discrepant achievers rate their reading ability, but female under-achievers feel that they had been slowed in school because of past poor reading more often than do over-achievers. Under-achieving males and females both think that their study habits are poor disproportionately more often than do over-achievers. Under-achievers report significantly fewer average number of study hours than do over-achievers.
5. Over-achievers report engaging in more extra-curricular activities than do over-achievers.
6. Over-achievers report a significantly higher proportion planning to continue some form of formal education than do under-achievers.
7. Even though no differences were found for either sex in which parent they might go to for a personal problem, under-achievers report that they would confide in someone other than their mother, father, or relative more frequently than would over-achievers.

8. Proportionately, a significantly higher number of male under-achievers report their mothers and selves as non-affiliated with any church than do over-achievers. For females, a disproportionate number report that their fathers are non-affiliated. The only difference noted in Catholic-Protestant comparison was that female under-achievers disproportionately report their mother's religion as Catholic.
9. A higher proportion of over-achievers than under-achievers choose at least one of their parents in preference to their relatives as the person with whom they would most like to live.
10. The over-achievers disproportionately report receiving strict consistent discipline from his parents in comparison to the under-achiever. However, the under-achievers feel that they had greater quantities of discipline than did the over-achievers. Finally, the implications are that the parents of over-achievers rely more heavily on talking in handling discipline.
11. As expected, over-achievers feel that their parents are more pleased with their academic records than do under-achievers.
12. The trend is for over-achievers to report disproportionately more frequently liking language arts, mathematics, and science subjects than do under-achievers. Under-achieving

females indicated that literature was their favorite subject more frequently than do over-achievers. English, mathematics, and science were reported as the hard subjects of under-achievers.

CHAPTER IV

ITEM ANALYSIS OF THE OBJECTIVE MEASURE OF MOTIVATION BATTERY

In this chapter the results of the item analysis and reliability estimates for each experimental instrument will be presented. Also, the implications are discussed for a research instrument constructed from those tests yielding an adequate number of discriminating items.

Null Hypothesis Item Analysis (Focusing Theory)

The following Null Hypothesis was tested by chi square on all items of the Word Rating List (WRL), the Perceived Parental Attitudes Inventory (PPAI), the Preferred Teacher Characteristic Scale (PTCS), and the Human Trait Inventory (HTI).

Null Hypothesis: There is no difference between over- and under-achievers in frequency of response to one of two item alternatives of the WRL, PPAI, PTCS, or HTI.

Because significant chi square values can be obtained with low cell frequencies, a decision had to be made to determine the point at which an item was to be rejected, even if it met the significance level criterion. For this study the rough approximation to setting lower limits on expected values was adopted of accepting no item which had a total over- and under-achiever of less than 12 for either response row. (Notice this limit was not applied to the columns, only to the rows. The columns were not considered because they were determined by the number of over- and under-achievers entered in the tables.)

Word Rating List (WRL)

A summary of the chi square item analysis of the WRL is presented in Table 4.1. (The response frequencies and chi square values for each item are presented in Appendix F, Tables F.1 and F.2.) From Table 4.1 it can be ascertained that 48 (40 per cent) of the original 119 items remained for each sex after cross-validation. Of the 48 discriminating items, 35 were identical for each sex.

Even with the more stringent significance level of .10 for both validation and cross-validation analysis many more items held than would have been expected by chance alone for the 119 item WRL.

Internal consistency reliability estimates for the 48 discriminating items of the WRL are summarized for various samples in Table 4.2. The estimates, obtained by Hoyt's analysis of variance technique, are for random samples of under-achievers, over-achievers, a general population and combined over- and under-achievers. All of the WRL reliability estimates are of an acceptable magnitude.

The 48 WRL cross-validation items were re-grouped and treated as a scale for further analysis.

Table 4.1

Number of Word Rating List Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .10	.05	.01	Total
Validation	Males	11	19	37	67
	Females	10	27	50	87
Cross-Validation	Males	4	8	36	48
	Females	7	7	34	48

Note: The Word Rating List originally contained 119 items.

Table 4.2

Summary of Hoyt's Analysis of Variance Reliability Estimates for the Word Rating List-Males and Females

Sample	N		Reliability Estimate	
	Males	Females	Males	Females
Random Sample	66	66	.92	.90
Over-Achievers	50	50	.92	.90
Under-Achievers	50	50	.91	.88
Combined Over- and Under-Achievers	100	100	.93	.93

Note: Estimates based on 48 male and 48 female items.

Perceived Parental Attitudes Inventory (PPAI)

The results of the chi square item analysis of the PPAI are summarized in Table 4.3. (The response frequencies and chi square values for each item are tabulated in Appendix F, Tables F.3 and F.4.) For the validation sample the Null Hypothesis was rejected for about a third of the items (59 male and 50 female). For the cross-validation items the Null Hypothesis was only rejected for 14 male items and 20 female items.

Because of the low number of items obtained from the cross-validation analysis, reliability estimates were calculated on a randomly selected general population to help decide whether to use the final items as a scale. Reliability estimates of .39 for males and .57 for females were obtained for samples of 66 students of each sex. Because these estimates are much lower than desired for valid interpretation, no further analysis of the PPAI was conducted for this report.

Preferred Teacher Characteristics Scale (PTCS)

The chi square item analysis results for the PTCS are summarized in Table 4.4. (All response frequencies and chi square values for the items are summarized in Appendix F, Tables F.5 and F.6.)

For the validation samples only 18 male items and nine female items were of such magnitude to permit rejection of the Null Hypothesis. The cross-validation analysis indicated that only seven male items and one female item were significant discriminators between over- and

Table 4.3

Number of *Perceived Parental Attitudes Inventory* Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .20	.10	.05	.01	Total
Validation	Males	18	16	20	5	59
	Females	15	9	15	11	50
Cross-Validation	Males	6	3	5		14
	Females	6	2	8	4	20

Note: The PPAI originally consisted of 150 items.

Table 4.4

Number of *Preferred Teacher Characteristics Scale* Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .20	.10	.05	.01	Total
Validation	Males	7	5	4	2	18
	Females	4	2	3		9
Cross-Validation	Males		2	4	1	7
	Females		1			1

Note: The PTCS originally consisted of 64 items.

Table 4.5

Number of *Human Trait Inventory* Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .20	.10	.05	.01	Total
Validation	Males	9	13	8	18	48
	Females	9	10	12	22	53
Cross-Validation	Males		5	7	14	26
	Females		6	9	10	25

Note: The Human Trait Inventory originally consisted of 94 items.

Table 4.6

Summary of Hoyt's Analysis of Variance Reliability Estimates for the *Human Trait Inventory* - Males and Females

Sample	N		Reliability Estimate	
	Males	Females	Males	Females
Random Sample	66	66	.80	.76
Over-Achievers	157	178	.72	.71
Under-Achievers	137	167	.68	.70
Combined Over- and Under-Achievers	294	345	.78	.76

Note: Estimates based on 23 male and 23 female items.

under-achievers. Because of the low number of discriminating items resulting from the analysis, no further analysis was done on the PTCS.

Human Trait Inventory (HTI)

A summary of the HTI item analysis based on chi square is presented in Table 4.5. (The observed response frequencies and chi square values for the item analysis are reproduced in Appendix F, Tables F.7 and F.8.)

After cross-validation at the original .20 validation and .10 cross-validation significance levels, 26 male and 25 female items remained. The 23[1] most significantly discriminating items were selected for Hoyt's analysis of variance reliability estimates (See Table 4.6). Because all of these estimates were at or near an acceptable reliability level and because a large proportion of the items discriminated at the .01 level, the scale was retained for the correlational and regression analysis. Future developments on this scale will involve increasing the number of items to raise the reliability to a more acceptable level.

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[1] Because of MISTIC imput limitations at the time of the analysis, only 23 items could be factored using 100 combined over- and under-achievers. The original factor analysis was done on only the 23 items. Towards the end of the project the memory capacity of the computer was increased allowing the use of larger matrices. Thus, the factor analysis was redone. This procedure change is discussed more fully in Chapter VII.

Directional Hypothesis Item Analysis (Predictive Theory)

The following Null and Directional Alternate Hypotheses were tested on the Generalized Situational Choice Inventory (GSCI) and the Preferred Job Characteristics Scale (PJCS).

Null Hypothesis:	There is no difference between over- and under-achievers in frequency of response to one of two item alternatives of the GSCI or the PJCS.
Alternate Hypothesis:	There is a difference with both over- and under-achievers responding in direction prescribed by the polar dimension of the academic motivation theory.

The Generalized Situational Choice Inventory (GSCI)

The number of GSCI items identified at various chi square significance levels are tabulated in Table 4.7. (Response frequencies and chi square values are reproduced in Appendix F, Tables F.9 and F.10.)

Forty-five male and 30 female usable GSCI items remained after cross-validation. All these items were used to obtain a Hoyt's analysis of variance reliability estimate (reported in Table 4.8). For the males, all reliability estimates are of an acceptable magnitude. For females the random sample and combined over- and under-achievers is acceptable, but the coefficients based on over- and under-achievers alone fall slightly lower than desired. Future refinement of the scale should involve increasing the number of items for females. The scales were retained for further analysis.

Table 4.7

Number of Generalized Situational Choice Inventory Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .20	.10	.05	.01	Total Identified	Total* Used In Scale
Validation	Males	26	16	30	31	103	
	Females	22	17	24	29	92	
Cross-Validation	Males		7	16	25	48	45
	Females		7	9	18	34	30

*Two male and three female items were significant, although contrary to theory. One female item did not meet the criterion of having at least 12 responses in each row.

Table 4.8

Summary of Hoyt's Analysis of Variance Reliability Estimates for the Generalized Situational Choice Inventory - Males and Females

Sample	N Males	Females	Reliability Estimates Males	Females
Random Sample	66	66	.82	.85
Over-Achievers	50	50	.83	.68
Under-Achievers	50	50	.80	.77
Combined Over- and Under-Achievers	100	100	.84	.90

Note: Estimates based on 45 male and 30 female items.

Preferred Job Characteristics Scale (PJCS)

The number of items determined for various significance levels of chi square values are summarized in Table 4.9. (Item frequencies and chi square values are reproduced in Appendix F, Tables F.11 and F.12.)

For 20 male and 33 female items, the Null Hypothesis was rejected on the validation sample and the alternate was accepted in the direction prescribed by the polar dimension theory of motivation. The number of items was sufficiently large to warrant conducting the Hoyt's analysis of variance reliability estimation which are summarized for various samples in Table 4.10.

The reliability estimates (.76 and .60, male and female, respectively) for the PJCS was the lowest of all scales for the random sample. However, the estimates were within the acceptable range for discrepant achiever samples. Though recognizing its limitations the scales were retained for further analysis.

The M-Scales

The four functioning measures (The Generalized Situational Choice Inventory, Preferred Job Characteristics Scale, Word Rating List, and the Human Trait Inventory) were combined into one instrument and labeled the M-Scales. The total scale contained 139 male items and 136 female items. On a random sample of 240 students from the original 4200, reliability estimates based on Hoyt's analysis

Table 4.9

Number of *Preferred Job Characteristics Scale* Items for Various Chi Square Significance Levels

Sample		Number of Items Chi Square Significance Level .20	.10	.05	.01	Total
Validation	Males	9	3	14	5	31
	Females	9	12	13	14	48
Cross-Validation	Males		8	6	6	20
	Females		4	13	16	33

Note: The PJCS originally consisted of 64 items.

Table 4.10

Summary of Hoyt's Analysis of Variance Reliability Estimates for the *Preferred Job Characteristics Scale* - Males and Females*

Sample	N		Reliability Estimate	
	Males	Females	Males	Females
Random Sample	66	66	.76	.60
Over-Achievers	50	50	.85	.93
Under-Achievers	50	50	.87	.88
Combined Over- and Under-Achievers	100	100	.89	.83

Note: Estimates based on 20 male and 23 female items.

*Originally the PJCS consisted of 64 items. The 23 female items were those used for the factor analysis of Chapter VII.

of variance technique were estimated to be .94 for males and .93 for females for the total scale.

Summary

Chi square item analysis was done for the battery of six tests. Two of the instruments, the Perceived Parental Attitudes Inventory and the Preferred Teacher Characteristics Scale did not produce a sufficient number of items to warrant further analysis. For the Word Rating List 48 male and an equal number of female items remained after cross-validation with an acceptable reliability of .88 to .93 for various samples. Twenty-six male and 25 female Human Trait Inventory items remained after cross-validation. The reliability coefficients ranged from .68 to .80. The Generalized Situational Choice Inventory yielded 45 male and 30 female items with reliability estimates from .80 to .84 for males and from .68 to .90 for females. The Preferred Job Characteristics Scale produced 20 male and 33 female items after cross-validation with reliabilities ranging from .76 to .89 for males and .60 to .93 for females. These later tests were combined into one instrument and labeled the M-Scales. Total test reliability estimates of .94 for males and .93 for females were obtained from a random sample of 240 students drawn from the original 4200.

CHAPTER V

ANALYSIS OF THE EDUCATIONAL-OCCUPATIONAL STATUS INFORMATION

The assumption that motivation, achievement, and social class are related has a long tradition. As far back as 1940, Coleman reviewed the literature on the relation of social class to achievement and aptitude and concluded that for a variety of reasons, the aspects of this important problem were only vaguely defined.[1] Twenty years later, Brim came to essentially the same conclusion.[2] Both reviewers mentioned the measurement problem as being the primary contributor to the confusion with design difficulties adding to the problem. With this ambiguous heritage, the following analysis was designed to assess the relation of educational-occupational status to achievement, motivation, and aptitude.

Educational-Occupational Index Development Procedure

Using information from the Educational-Occupational Status Data Card described in Chapter II, an index was derived from empirical weightings of 1) mother's education, 2) father's education, and 3) father's occupation. The weightings for the three variables were developed using the following procedure.[3]

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[1] Herbert A. Coleman, "The Relationship of Socio-Economic Status to the Performance of Junior High School Students," Journal of Experimental Education, Vol. 9, No. 1, 1940, 61-62.

[2] David C. McClelland, Alfred Baldwin, Urie Bronfenbrenner, and Fred Strodtbeck, Talent and Society, D. Van Nostrand Co., Princeton, New Jersey, 1958.

1. The description of each father's occupation was given a prestige rating between zero and 100, based on the North-Hatt socio-economic classification system with interpolations derived at Ohio State and by A. Haller of Michigan State University. (A copy of the weightings may be found in Appendix C.)
2. The last educational level attained by the parents was given a number based on an eight point scale. (This scale is also reproduced in Appendix C.)
3. Intercorrelations were computed for each of the above three variables on a random sample of 260 students.
4. The coefficients were factor analyzed to determine the correlation of each variable with the first factor.[4]
5. The "z" transformation of each variable was then multiplied by the correlation of that variable with the first factor and the equation was reduced to the following:

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[3] Carolyn L. Farquhar, A Study of the Relationship Between Socio-Economic-Educational Level and Diagnosis of Reading Difficulty, Unpublished Master's Thesis, Michigan State University, East Lansing, Michigan, 1960.

[4] M. J. Hagood and D. O. Price, Statistics for Sociologists, Henry Holt and Company, New York, (Rev. Ed.)

Index Score = .4653 (Father's Educational Weighting) +
.5060 (Mother's Educational Weighting) +
.0771 (Prestige Rating of Father's Occupation) - K[5] (not used in calculation).

6. All individuals used in the subsequent analysis were given a single score based on the solution of the above equation.

Correlational Analysis

The purpose of the correlational analysis was to determine the relation of the educational-occupational index to 1) the M-Scale test of motivation, 2) the grade point average achievement criterion, and 3) the DAT-VR aptitude measure. The Null Hypothesis tested for the product moment intercorrelations based on the above four variables was:

> Null Hypothesis: There is no relationship between the educational-occupational index and measures of motivation, aptitude, or achievement.

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[5] Reduction of the equation accumulates a constant ($\Sigma\ {}^{-}X_n \cdot Y_{nf_1} / \sigma\ n$) which serves no purpose in being retained in the index calculations other then needlessly to complicate calculations. The index development procedure was cross-validated on two other randomly drawn samples with results being practically identical to the above, i.e. for an n of 31, the equation reduced to $.4494\ X_1 + .5344\ X_2 + .0715\ X_3 - 8.4930$ and for an n of 103 the equation developed was $.4722\ X_1 + .5657\ X_2 + .0757\ X_3 - 5.7341$. The major variation from formula to formula was in the negative constant. The relative weightings can roughly be rounded to a 1:1:2 proportion for the contribution of each variable to the index.

Male and Female General Population

A summary of the intercorrelations for the four variables (educational-occupational index, M-Scales, grade point average, and DAT-VR) is presented in Table 5.1. All correlations in this table are based on the responses of a randomly selected sample from the original 4200 student population. In all cases, the Null Hypothesis is rejected for the female intercorrelations. For males, the pattern was inconsistent. With a range from .35 to .65, the M-Scale, grade point average, and DAT-VR intercorrelations indicate rejection of the Null Hypothesis. The correlations between the educational-occupational indices and other three variables were insignificant for the validation sample but significant for the cross-validation sample. It is apparent that given this large number of correlations, some of the coefficients are spurious. Further cross-validations will serve to discriminate between these erratic relationships and the more stable ones.

Male and Female Under-Achievers

A summary of the intercorrelations of the four variables based on scores of male and female under-achievers is presented in Table 5.2. Of major interest is the lack of a significant relationship in both validation and cross-validation groups between educational-occupational status indices and the M-Scales, indicating acceptance of the Null Hypothesis. For males, all of the other intercorrelations are significant indicating rejection of the Null Hypothesis except for 1) the cross-validation correlation of educational-occupational status indices

Table 5.1

Intercorrelations Among Variables: Grade Point Average (GPA), Differential Aptitude Test-Verbal Reasoning (DAT-VR), Michigan M-Scale (MS) and Educational-Occupational Status (EOS) of Male and Female General Population

	GPA		DAT-VR		MS		EOS	
	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation
GPA			.62**	.54**	.48**	.40**	.21*	.22*
DAT-VR	.58**	.65**			.35**	.30**	.26**	.31**
MS	.53**	.64**	.35*	.54**			.28**	.25**
EOS	.09	.42**	.16	.57**	.13	.39**		

Note: Correlations below diagonal are male general population (Validation N = 123; Cross-Validation N = 115), above are female general population (Validation N = 119; Cross-Validation N = 124).

*Significantly different from zero at .05 level.
**Significantly different from zero at .01 level.

Table 5.2

Intercorrelations Among Variables: Grade Point Average (GPA), Differential Aptitude Test-Verbal Reasoning (DAT-VR), Michigan M-Scale (MS) and Educational-Occupational Status (EOS) of Male and Female Under-Achievers

	GPA		DAT-VR		MS		EOS	
	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation
GPA			.77**	.60**	.35**	.16	.28*	.19
DAT-VR	.73**	.69**			.26*	.14	.26*	.39**
MS	.38**	.34*	.46**	.19			.14	.20
EOS	.28*	.13	.37**	.32*	.11	.24		

Note: Correlations below diagonal are male under-achievers (Validation N = 61; Cross-Validation N = 55), above are female under-achievers (Validation N = 73; Cross-Validation N = 63).

*Significantly different from zero at .05 level.
**Significantly different from zero at .01 level.

with grade point average and 2) the M-Scales cross-validation scores with DAT-VR scores. For females, the pattern is similar in that all remaining intercorrelations are significant indicating rejection of the Null Hypothesis except for 1) the cross-validated M-Scale scores correlation with grade point average and DAT-VR scores and 2) the cross-validated educational-occupational indices correlation with grade point average.

Male and Female Over-Achievers

The intercorrelations of the four variables based on scores of male and female over-achievers are summarized in Table 5.3. The Null Hypothesis of no significant relationship is rejected for all cases.

Multivariate Analysis

To assess the effects of adding the educational-occupational index to motivation and aptitude in estimating academic achievement, a multivariate analysis was done testing the following Null Hypothesis.

Null Hypothesis: Educational-occupational indices, when added to either the M-Scale scores or the DAT-VR scores, will not increase the estimation of grade point average.

In the following analysis, all of the correlations are based on Pearson product moment coefficients.

Table 5.3

Intercorrelations Among Variables: Grade Point Average (GPA), Differential Aptitude Test-Verbal Reasoning (DAT-VR), Michigan M-Scale (MS) and Educational-Occupational Status (EOS) of Male and Female Over-Achievers

	GPA		DAT-VR		MS		EOS	
	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation	Validation	Cross-Validation
GPA			.82**	.75**	.47**	.48**	.36**	.35**
DAT-VR	.82**	.79**			.46**	.48**	.50**	.52**
MS	.54**	.69**	.48**	.54**			.35**	.46**
EOS	.24*	.45**	.33**	.49**	.32**	.45**		

Note: Correlations below diagonal are male over-achievers (Validation N = 76; Cross-Validation N = 72), above are female over-achievers (Validation N = 83; Cross-Validation N = 81).

*Significantly different from zero at .05 level.
**Significantly different from zero at .01 level.

Multiple Correlations

The multiple correlations used in testing the above Null Hypothesis are summarized in Tables 5.4 (Males) and 5.5 (Females). As would be expected, the combinations which include the DAT-VR yield the highest correlations. For both males and females, the educational-occupational status indices combined with the M-Scales result in the lowest multiple coefficient.

Test of Significance of Beta Weights

The beta weights for the three variable predictions of the grade point average achievement criterion are reproduced in Table 5.6. In all cases, the DAT-VR scores are weighted heaviest and the educational-occupational indices least. The tests of significance from zero for the beta weights may be found in Table 5.7. For all tests of significance, it can be ascertained that when combined with DAT-VR and M-Scales, the educational-occupational status indices account for no unique grade point average variance. Therefore, the Null Hypothesis is accepted.

Summary

An educational-occupational index was developed based on three status variables--education of mother, education of father, and father's occupational status. The index weighted each of the above three variables on the basis of the correlation with the first factor

Table 5.4

Multiple Correlation Relationships Among Differential Aptitude Test-Verbal Reasoning (DAT-VR), Michigan M-Scales (MS) and Educational-Occupational Status (EOS) With Grade Point Average For Males

	Over-Achievers		Under-Achievers		General Population	
	Validation (76)	Cross-Validation (72)	Validation (61)	Cross-Validation (55)	Validation (123)	Cross-Validation (115)
EOS + MS GPA	.55	.71	.45	.34	.53	.67
EOS + DAT-VR GPA	.86	.80	.73	.69	.58	.66
MS + DAT-VR GPA	.87	.85	.73	.72	.68	.74
EOS + MS + DAT-VR GPA	.88	.85	.73	.73	.68	.74

Table 5.5

Multiple Correlation Relationships Among Differential Aptitude Test-Verbal Reasoning (DAT-VR), Michigan M-Scales (MS) and Educational-Occupational Status (EOS) With Grade Point Average For Females

	Over-Achievers		Under-Achievers		General Population	
	Validation (83)	Cross-Validation (81)	Validation (73)	Cross-Validation (63)	Validation (119)	Cross-Validation (124)
EOS + MS GPA	.51	.51	.42	.23	.46	.42
EOS + DAT-VR GPA	.82	.75	.78	.60	.67	.59
MS + DAT-VR GPA	.83	.76	.79	.60	.72	.64
EOS + MS + DAT-VR GPA	.83	.77	.79	.61	.72	.64

Table 5.6

Beta Weights for Estimation of Grade Point Average Achievement Criterion from Differential Aptitude Test-Verbal Reasoning (DAT-VR), M-Scale (MS) and Educational-Occupational Status (EOS)

Sample		N	X_1 = DAT-VR		X_2 = MS		X_3 = EOS
Male Over-Achiever	Validation	76	.803(DAT-VR)	+	.188(MS)	+	.093(EOS)
	Cross-Validation	72	.597(DAT-VR)	+	.375(MS)	+	(-.018) (EOS)
Male Under-Achiever	Validation	61	.691(DAT-VR)	+	.056(MS)	+	(.022) (EOS)
	Cross-Validation	55	.690(DAT-VR)	+	.243(MS)	+	(-.153) (EOS)
Male General Population	Validation	123	.458(DAT-VR)	+	.371(MS)	+	(-.030) (EOS)
	Cross-Validation	115	.444(DAT-VR)	+	.405(MS)	+	.021(EOS)
Female Over-Achiever	Validation	83	.780(DAT-VR)	+	.124(MS)	+	(-.083) (EOS)
	Cross-Validation	81	.710(DAT-VR)	+	.190(MS)	+	(-.103) (EOS)
Female Under-Achiever	Validation	73	.714(DAT-VR)	+	.151(MS)	+	.072(EOS)
	Cross-Validation	63	.610(DAT-VR)	+	.089(MS)	+	(-.066) (EOS)
Female General Population	Validation	119	.607(DAT-VR)	+	.305(MS)	+	000(EOS)
	Cross-Validation	124	.519(DAT-VR)	+	.250(MS)	+	(-.004) (EOS)

Table 5.7

Tests of Significance of Beta Weights in Multiple Regression Estimation of Grade Point Average from Differential Aptitude Tests-Verbal Reasoning (DAT-VR), Michigan M-Scale (MS) and the Educational-Occupational Status (EOS) for Male and Female 1) Over-Achievers, 2) Under-Achievers, and 3) General Population

Sample		N	DAT-VR t	M-S t	EOS t
Male Over-Achiever	Validation	76	11.809**	2.765**	1.431
	Cross-Validation	72	7.463**	4.883**	.253
Male Under-Achiever	Validation	61	6.282**	.549	.227
	Cross-Validation	55	6.842**	2.455	-1.500
Male General Population	Validation	123	6.361**	5.153**	- .441
	Cross-Validation	115	5.224**	5.400**	.273
Female Over-Achiever	Validation	83	10.390**	1.722	-1.136
	Cross-Validation	81	7.802**	2.239*	-1.157
Female Under-Achiever	Validation	73	9.273**	2.000*	.947
	Cross-Validation	63	5.455**	.832	.579
Female General Population	Validation	119	8.671**	4.357**	.000
		124	6.829**	3.333**	.053

*Significant at .05 level.
**Significant at .01 level.

of a factor analysis. The index score was calculated on the basis of .4653 father's education plus .5060 mother's education plus .0771 the prestige rating of the father's occupation. In the main, the correlation of the educational-occupational index with grade point average, Differential Aptitude Test-Verbal Reasoning, or the M-Scales was either insignificant from zero or in the low positive range. The multivariate analysis indicated no significant contribution to estimating grade point average when the educational-occupational indices were combined with the DAT-VR and M-Scale scores.

CHAPTER VI

CORRELATION AND REGRESSION VALIDITY ANALYSIS

In the preceding chapter valid items which were combined into the sub- and total test of the M-Scales were identified. In the following section, the validity of these tests is estimated by correlation and regression analysis.

Correlation Analysis

Correlation analysis was conducted testing the following Null Hypothesis:

> Null Hypothesis: There is no relationship between either the total or sub-test M-Scale scores and Grade Point Average or Differential Aptitude Test-Verbal Reasoning scores.

A subsidiary hypothesis was constructed to assess the intercorrelations among sub-tests.

> Null Hypothesis: There is no relationship among the sub-tests of the M-Scales.

All analyses were done separately for each sex.

Sub-Test Correlation Analysis

In Table 6.1 the sub-test correlations with grade point average and the DAT-VR may be found. The sub-test intercorrelations are reproduced in the lower right corner of Table 6.1 (partitioned by the dotted lines).

Sub-Test Correlation With Grade Point Average. All the sub-tests correlated significantly with grade point average at the .01 level or greater. The correlations for males ranged from +.32 for the PJCS to +.51 for the WRL. The male GSCI scores correlated (r = +.50) with grade point average at an almost identical level to the WRL (r = +.51). The HTI correlation with the criterion was approximately midway between the high-low extremes (r = +.42).

The female sub-test correlations with the grade point criterion ranged lower than for the males (+.27 to +.42). For the females the WRL correlated highest (r = +.42) and the PJCS lowest (r = +.27) with the criterion. However, the HTI correlated higher (r = +.36) than the GSCI (r = +.32) with grade point average, which is the opposite from what was true with the males.

Sub-Test Correlation With DAT-VR. Even though significant correlations were found between all sub-tests and the DAT-VR, the magnitude of the coefficients for both male and female was lower than that found earlier between sub-tests and grade point average. For males the coefficients ranged from +.25 for HTI to +.42 for the WRL. The GSCI for males correlated again almost as highly with the criterion as did the WRL (r = +.39). However, the male PJCS ranked slightly higher than the HTI (r of+.30 compared to a +.25) which is a reversal of the grade point average findings.

Table 6.1

Intercorrelations Among Achievement, Aptitude and M-Scale Sub-Tests

Legend: GPA = Grade Point Average
DAT-VR = Differential Aptitude Test - Verbal Reasoning
GSCI = Generalized Situational Choice Inventory
HTI = Human Trait Inventory
PJCS = Preferred Job Characteristics Scale
WRL = Word Rating List

	GPA	DAT-VR	GSCI	HTI	PJCS	WRL
GPA		.60	.32	.36	.27	.42
DAT-VR	.62		.21	.29	.18	.34
GSCI	.50	.39		.53	.53	.43
HTI	.42	.25	.47		.43	.50
PJCS	.32	.30	.51	.39		.32
WRL	.51	.42	.51	.47	.32	

Note: Dotted lines separate sub-scale intercorrelations. Correlations above diagonal are female (n = 261), below are male (n = 254). All correlations are significantly different from zero at the .01 level or greater.

The female correlations with DAT-VR ranged from +.18 for the PJCS to +.34 for the WRL. The female HTI and GSCI correlated with the criterion in the twenties (+.29 and +.21, respectively). For the females, the ranking of the coefficients was identical to the sub-tests correlation with grade point average findings.

Sub-Test Intercorrelations. The sub-tests were all found to be significantly intercorrelated. The coefficients ranged from +.32 to +.51 for males and from +.32 to +.53 for females. The WRL and PJCS appear to be least intercorrelated for males and females. The remaining sub-tests are all about equally intercorrelated. None of the scales are so highly correlated that the conclusion could be drawn that only identical aspects are being measured; however, the intercorrelations are of sufficient magnitude to question whether the sub-scales measure independently.[1]

Total Test (M-Scale) Correlational Analysis

The M-Scale correlation with grade point average, and DAT-VR for males and females are reported in Table 6.2 for validation and cross-validation samples.

As with the sub-test analysis, the Null Hypothesis of no relationship between the total M-Scale scores and either grade point

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[1] An experimental MISTIC program has been prepared by Dr. Sutherland Frame of the Michigan State University Mathematics Department to enable scale analysis of the total M-Scale for 240 individuals. At the time of this writing the analysis has not been completed.

Table 6.2

Correlations Among M-Scale Total Scores, Differential Aptitude Test-Verbal Reasoning (DAT-VR) and Grade Point Average (GPA) for Validation and Cross-Validation Samples of Males and Females

	Sample	DAT-VR	GPA	M-Scales
DAT-VR	Validation		.60	.30
	Cross-Validation		.56	.43
GPA	Validation	.62		.40
	Cross-Validation	.71		.48
M-Scale	Validation	.45	.56	
	Cross-Validation	.50	.49	

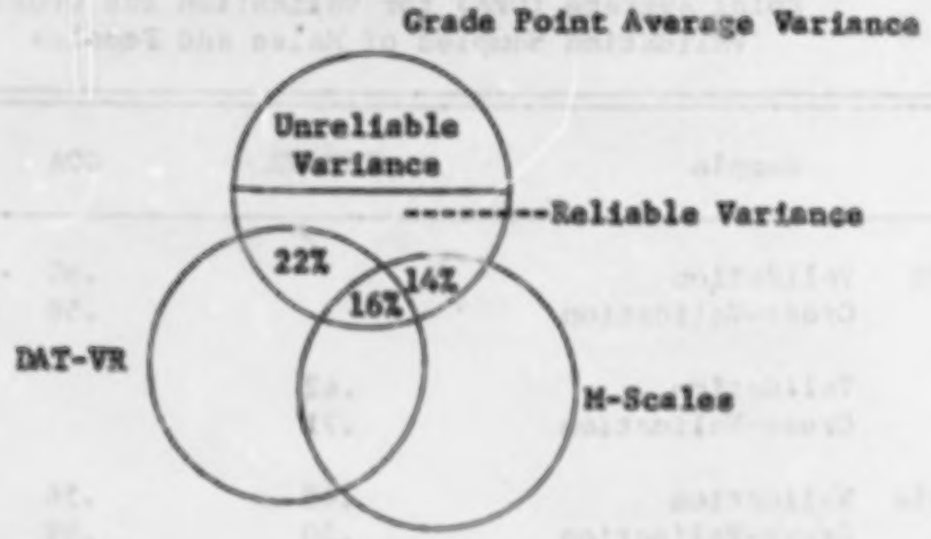
Note: Validation n for males = 254, females = 261, cross-validation n for males = 118, females = 117. Correlations above the diagonal are female, below are male.

average of DAT-VR is rejected. The male M-Scale scores correlated +.56 and +.49 with the grade point average criterion for both validation and cross-validation samples. The female M-Scale scores correlated +.40 validation and +.48 cross-validation with the same grade point average criterion. These estimates indicate that the validity of the M-Scales is of an acceptable magnitude to warrant further exploration of their research value.

Implications of Total Test (M-Scale) Correlational Analysis. The variance that the DAT-VR and the M-Scales account for in predicting grade point average is graphically approximated in Figure 6.1.

Figure 6.1

Graphic Approximations of DAT-VR, M-Scales and Grade Point Average Variance


Grade Point Average Variance
Unreliable Variance
Reliable Variance
22%
14%
16%
DAT-VR
M-Scales

The DAT-VR accounts for about one-third of the reliable grade point average variance. The M-Scale accounts for approximately thirty per cent of the GPA reliable variance, over one-half of which is in common with the DAT-VR. It is assumed that the fourteen per cent of the reliable GPA variance accounted for uniquely by the M-Scales is composed primarily of academic motivation. Further empirical studies will be necessary to delineate the components of the unique contribution of the M-Scales.

Regression and Multiple Correlation Analysis

For further validity analysis, the sub- and total tests of the M-Scales were added by regression analysis to the DAT-VR to estimate grade point average. This section constitutes one of the critical tests of the experimental instruments. This particularly is true because of the decision not to partial out aptitude in the original selection of the valid items. Even though the M-Scales estimate some of the same variance the DAT-VR does, it was also assumed that they would estimate some unique aspects not accounted for by the aptitude measure.

The regression analysis was conducted to test the following Null Hypothesis:

> Null Hypothesis: Adding the sub- or total M-Scale tests to the DAT-VR aptitude measure will not increase the precision of estimating the grade point average criterion.

Two approaches, each with certain limitations, were used to test the above hypothesis. First, the beta weights from the regression equation estimates of grade point average using aptitude (DAT-VR) and the total and sub- M-Scale scores were tested for significance from zero. The result of this test indicates whether the variable is sufficiently weighted to estimate the criterion, but it does not reveal a significant precision increase over using the other estimators alone. Secondly, the beta weights were tested for increase in precision of adding one to the other in estimating a criterion.[2] A number of possibilities were entertained before finally selecting the approach advocated by Clark. The problem was to locate a sensitive test which would function with an extremely limited ceiling (i.e., the DAT-VR alone correlated highly with the grade point criterion) and which would control for the effects of the other variable. The difficulty with Clark's test is that with the large degree of freedom used in the subsequent analysis, extremely large ratios can be obtained with small actual differences in increase of precision of estimation.

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[2] The formula for making this F test was developed by Philip J. Clark, Department of Zoology, Michigan State University and has not been published. The formula used is: $F_{(1,N-m-1)} = \frac{\leq d_1^2 - \leq d_2^2/1}{\leq d_2^2/N-m}$

The $\leq d_1^2$ is the squared deviations (error variance) about the regression line with one variable estimation and the $\leq d_2^2$ is the squared deviations (error variance) about the regression plane with two variable estimations.

Sub-Test Analysis

Each of the four M-Scale sub-tests were added separately to the DAT-VR scores in a regression estimation of the grade point average criterion. A summary of the beta weights of the resultant regression equation and the multiple correlation coefficients are reproduced in Table 6.3. In all estimates the DAT-VR was weighted heaviest. For both sexes the relative weighting and multiple correlation of each of the four sub-tests was about equal from test to test except for the PJCS. Here the weighting of the DAT-VR was greater and the PJCS was correspondently weighted less than for any of the other three sub-test combinations. The low PJCS beta weight is reflected in the slight increase (.02) of the multiple over the zero order correlation coefficient.

The tests of significance of the beta weights from zero and for increase in precision of estimating the criterion are summarized in Tables 6.4 and 6.5. For all tests the beta weights were significantly

Table 6.3

Beta Weights and Multiple Correlation for Sub-Tests of M-Scales and Differential Aptitude Test-Verbal Reasoning (DAT-VR) Estimation of Grade Point Average - Males and Females

DAT-VR + (Sub-M-Scale) = $\hat{Y}_{GPA}$	Males N = 254			Females N = 261		
	$\beta^*_{\text{DAT-VR}}$	$\beta^*_{\text{(Sub-M-Scale)}}$	Multiple R	$\beta^*_{\text{DAT-VR}}$	$\beta^*_{\text{(Sub-M-Scale)}}$	Multiple R
Word Rating List	.4961	.3029	.68	.5166	.2470	.64
Human Trait Inventory	.5526	.2866	.68	.5438	.2003	.63
Generalized Situational Choice Inventory	.5055	.3040	.68	.5580	.2009	.63
Preferred Job Characteristics Scale	.5809	.1423	.64	.5713	.1660	.62

Note: The zero order correlation between Grade Point Average and DAT-VR was .62 for males and .60 for females (Supra, Table 6.1, page 115).

Table 6.4

Tests of Significance of Beta Weights from Zero for a Two Variable Estimation (M-Scale Sub-Tests and Differential Aptitude Test-Verbal Reasoning - DAT-VR) of Grade Point Average - Males and Females

Hypothesis	Scale	"t" Males df = 252		Females df = 259	
		$\beta^*_{\text{DAT-VR}}$	$\beta^*_{\text{M-Scale}}$	$\beta^*_{\text{DAT-VR}}$	$\beta^*_{\text{M-Scale}}$
Ho: $\beta^* = 0$	Word Rating List	9.76	5.96	10.22	4.89
	Human Trait Inventory	11.63	6.03	10.78	3.97
	Generalized Situational Choice Inventory	10.13	6.09	11.36	4.09
	Preferred Job Characteristics Scale	11.43	2.80	11.38	3.36

Note: All t's significant at .01 level or greater.

Table 6.5

Tests of Significance of Increase in Precision of Adding Each of the Sub-Test M-Scales to the Differential Aptitude Test-Verbal Reasoning to Estimate Grade Point Average - Males and Females

Hypothesis	Scale	F's Males df = (1 & 251)	F's Females df = (1 & 258)
Ho: $S_{e1}^2 - S_{e2}^2 = 0$	Word Rating List	38.86	23.66
	Human Trait Inventory	39.68	15.69
	Generalized Situational Choice Inventory	40.45	16.51
	Preferred Job Characteristics Scale	10.32	11.39

Note: The formula for this test was developed by P. J. Clark and is detailed on page 119. All F's were significant at .01 level or greater.

different from zero at the .01 level or greater. Furthermore, the four sub-tests significantly increased the precision of estimating the grade point average criterion. (All F's were significant at the .01 level or greater.)

In Table 6.6 the multiple regression equation prediction of grade point average from the DAT-VR plus all four of the sub-tests of the M-Scales may be found. For males, the optimum weighting produced a multiple correlation of .74, for females .66. Of the four sub-scales, the Male HTI was weighted most highly. Inspection of Table 6.1 (supra, page 115) reveals a low correlation of Male HTI with DAT-VR and a fairly moderate correlation with GPA. In the female equation the WRL received the highest weighting even though it correlated highest of the four scales with the DAT-VR as reported in Table 6.1. This finding is interpretable when further observation is made that the Female WRL correlates highest with the criterion.

For both sexes the PJCS was weighted lowest, again reflecting its doubtful usefulness as a test.

The test of significance of the beta weights from zero indicated that for males and females the sub-scales significantly contributed to estimating the grade point criterion. The "t" tests of the beta weights are summarized in Table 6.7. (All of the "t's" are greater than .01.)

The four sub-test beta weights derived on the 254 males and 261 females were used to estimate grade point average on cross-validation samples of 118 males and 117 females. For males the

Table 6.6

Four Variable Estimates of Grade Point Achievement Criterion with Corresponding Beta Weights and Multiple Correlations - Males and Females

Legend: DAT-VR = Differential Aptitude Test-Verbal Reasoning
WRL = Word Rating List
HTI = Human Trait Inventory
GSCI = Generalized Situational Choice Inventory
PJCS = Preferred Job Characteristics Scale
M = Males F = Females

N	Beta Weights	Multiple Correlation
M 254	.4427(DAT-VR)+.1353(WRL)+.2274(HTI)+.1106(GSCI)+.0815(PJCS)	.74
F 261	.4985(DAT-VR)+.1706(WRL)+.0621(HTI)+.0759(GSCI)+.0568(PJCS)	.66

Table 6.7

Tests of Significance From Zero of the Beta Weights For the DAT-VR and M-Scales Sub-Tests

Legend: DAT-VR = Differential Aptitude Test-Verbal Reasoning
GSCI = Generalized Situational Choice Inventory
HTI = Human Trait Inventory
PJCS = Preferred Job Characteristics Scale
WRL = Word Rating List

Sex	df		DAT-VR	GSCI	"t" HTI	PJCS	WRL
Males	252	t =	31.05	9.673	31.09	11.38	8.41
Females	259	t =	33.69	7.792	9.045	5.319	10.795

Note: All "t's" significant at .01 level or greater.

coefficient was .71 and for females .56. The shrinkage was greater for females than for males, i.e. from .66 to .56 and from .74 to .71, respectively.

Total M-Scale Analysis

The beta weights and multiple correlations for the total M-Scale and DAT-VR estimation of the grade point average criterion are summarized for both sexes in Table 6.8. For both validation and cross-validation samples, the DAT-VR was most heavily weighted. The weightings are fairly comparable from validation to cross-validation sample for the females. For males, the cross-validation sample indicates a much lower weighting of the M-Scales than shown on the validation sample. The increase in the multiple over the zero order correlation is more marked for the males than females in the validation sample. For the cross-validation samples the ranking is reversed with the increase being greater for the females than the males.

The beta weights developed on the validation sample for the total M-Scale scores added to DAT-VR were used on the cross-validation samples to estimate a grade point average. The correlation between actual and estimated grade point average was .699 for males and .621 for females. The shrinkage was .029 for males and .007 for females.[3] The slight shrinkage for both sexes indicates the weights were close to the optimal estimates for these samples.

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[3] The differences may have been slightly larger than indicated, but computer rounding errors probably converged the estimates.

Table 6.8

Beta Weights and Multiple Correlation for Total M-Scale and Differential Aptitude Test-Verbal Reasoning (DAT-VR) Estimation of Grade Point Average - Males and Females

	Sample	N	Beta Weights	Multiple Correlation	Zero-Order DAT-VR ~ GPA
Males	Validation	254	.4631(DAT-VR)+.3459(M-Scale)	.69	.62
	Cross-Validation	118	.6279(DAT-VR)+.1709(M-Scale)	.73	.71
Females	Validation	261	.5287(DAT-VR)+.2399(M-Scale)	.64	.60
	Cross-Validation	117	.4537(DAT-VR)+.2797(M-Scale)	.63	.56

The tests of the significance of the beta weights from zero for the total M-Scale plus DAT-VR estimation of grade point average are summarized in Table 6.9. All the beta weights are significant at the .01 level or greater with the exception of the male cross-validated M-Scales which are at the .05 level. The tests of significance of increase in precision by adding the total M-Scale scores to the DAT-VR scores so that grade point averages can be estimated are summarized in Table 6.10. Here, again, the results are similar to the "t" tests, the F's were all significant at the .01 level or greater except for the male cross-validation sample which was significant at the .05 level.

On the basis of the prededing analysis the multiple regression Null Hypothesis was rejected for the various samples, but only with reservations for the male cross-validation sample. Further cross-validation will be necessary before a more definite decision can be made.

Summary

The validity of the sub- and total test was estimated by correlation and regression analysis. The male sub-test scores correlated from +.32 to +.51 with the grade point average criterion. The female sub-test scores correlated from +.32 to +.42 with the grade point average criterion. A significant correlation was also found for both sexes between sub- and total M-Scales with the DAT-VR but of a lower

Table 6.9

Tests of Significance from Zero for Total M-Scale and Differential Aptitude Test-Verbal Reasoning (DAT-VR) Beta Weights for Estimating Grade Point Average Criterion - Males and Females

Sample		df	t's			
			DAT-VR	p	M-Scales	p
Males	Validation	251	9.066	.01	6.77	.01
	Cross-Validation	115	8.500	.01	2.31	.05
Females	Validation	258	10.575	.01	4.798	.01
	Cross-Validation	114	5.610	.01	3.457	.01

Table 6.10

Tests of Significance of Increase in Precision by Adding the Total M-Scales to the Differential Aptitude Test-Verbal Reasoning to Estimate Grade Point Average - Males and Females

Sample		1 df and	F	p
Males	Validation	250	46.78	$<.01$
	Cross-Validation	114	5.03	$<.05$
Females	Validation	257	22.99	$<.01$
	Cross-Validation	113	11.80	$<.01$

Note: The formula for this test was developed by P. J. Clark (supra, page 119).

magnitude. The sub-scales intercorrelated positively, but indicated that sufficient uniqueness of measurement existed to warrant further study of their various structures. The total test correlated +.30 and +.43 for females and +.49 and +.56 for males with the grade point average criterion for validation and cross-validation samples, respectively. The multiple correlation based on adding the four subtests independently to DAT-VR was higher for males (r = +.74) than for females (r = +.66). The regression analysis indicated that the addition of either the sub- or total M-Scale tests to DAT-VR significantly contributed to the precision of predicting grade point average, but the Preferred Job Characteristics Scale made only a minimal increase. Furthermore, the male cross-validation sample indicated only a .05 level of confidence in rejecting a Null Hypothesis test of significants of difference of beta weight from zero or an increase of precision of estimation indicating the need for further cross-validation.

CHAPTER VII

FACTOR ANALYSIS

> Factor analysis ..."is a way of getting an overview of a large number of correlation coefficients to see if the common variance which they express, which has been measured only in pairs of variables taken two-by-two, can be described in broader terms. A successful factor analysis is like the contour map of a whole countryside, which is based upon many separate measurements of the relative altitudes of hilltops and hollows. It gives new perspectives over the domain, and it brings into prominence features which had previously escaped attention."[1]

Items from the four functioning tests, the Word Rating List (WRL), the Human Trait Inventory (HTI), the Generalized Situational Choice Inventory (GSCI), and the Preferred Job Characteristics Scale (PJCS), were subjected to factor analysis to provide a base for again theorizing about the structure of high and low motivated students. Two separate hypotheses were considered for the analysis depending upon whether the items of the test were derived from focusing or the polar predictive theory. For the focusing theory instruments the hypothesis tested was:

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[1] S. Diamond, Information and Error, New York: Basic Books, Inc., 1959, p. 206.

Hypothesis: Factor analysis of cross-validated items will yield an interpretable structure.

For the predictive theory instruments the following hypothesis was tested:

Hypothesis: Factor analysis of cross-validated items will yield an interpretable structure supportive of the polar theory of academic motivation.

The preceding hypotheses were not tested against an error model. Decisions of inclusion and exclusion of elements or concepts in a theory were based on a combination of mathematical logic and psychological interpretation. Therefore, the hypotheses were not reformulated in Null form.

As specified in Chapter II, the principal axis solution for factoring a matrix was used in the study. The correlation matrices for each test and sex are reproduced in Appendix G. The unrotated factors and their item loadings are in for those factors which had sumsof squares (Eigen values) greater than one are also found in Appendix G. Those factors which met the sum-of-squares-greater-than-one criterion were rotated using the quartimax method. Rotation was continued until 1) at least three items or more remained on all factors, and 2) the results made psychological sense.

Focusing Theory Based Word Rating List

For males and females the 48 discriminating WRL items were factored using the responses of 100 male and 100 female combined over- and under-achievers. (The correlation matrices are reproduced in Tables G.1 and G.3, Appendix G.) Thirteen male and 15 female factors met the sums-of-squares-in-excess-of-one criterion. (The unrotated loadings are reproduced in Tables G.2 and G.4, Appendix G.) Using the three-items-loading-on-a-factor criterion, two male and four female factors were determined.

Male Factors

The items, scoring direction, and loadings for the two male WRL factors are reproduced in Table 7.1. All of the positive items loaded on Factor I and the negative items on Factor II.[2] Furthermore, the loadings for the first factor are greater in magnitude than for the second factor. One item (passive) loaded .186 on both factors. Because its low loading indicated the presence of a specific factor, it was excluded from further interpretation.

Factor I. Thirty-three items loaded heaviest on the first male WRL factor. The content of the items indicate a person who sees himself through the teacher's eyes as being the educator's idealized student. The words describe an effective, bright, orderly, goal oriented, eager learner; the factor was labeled academician.

Factor II. Fourteen items loaded heaviest on the remaining WRL factor. These items have overtones of the reflected self-perception being that

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[2] The items are scored in the direction of over-achiever responses. Responses predominantly answered "usually" or "always" by over-achiever were given a +1 weight; those answered "never" or "sometime" were assigned 0.

Table 7.1

Item Loadings on The Male Word Rating List Factors

Item Number* A	Item Number* B	Scoring Direction	Item	Loading
			Factor I	
97	38	+	an achiever	.766
76	33	+	above average	.734
83	35	+	a thinker	.730
101	40	+	competent	.725
77	34	+	productive	.708
115	45	+	thorough	.677
16	10	+	efficient	.672
85	36	+	dependable	.664
48	25	+	ambitious	.646
13	8	+	successful	.639
18	12	+	purposeful	.633
34	19	+	intelligent	.627
2	2	+	talented	.614
98	39	+	a planner	.613
119	48	+	serious	.612
12	7	+	smart	.603
41	23	+	systematic	.601
32	17	+	original	.600
22	14	+	studious	.592
67	31	+	intellectual	.586
71	32	+	alert	.578
17	11	+	orderly	.576
52	27	+	exacting	.570
103	42	+	teachable	.560
10	6	+	logical	.557
29	16	+	responsible	.542
33	18	+	consistent	.503
8	5	+	confident	.481
5	4	+	practical	.478
36	20	+	in-the-know	.458
89	37	+	contented	.434
118	47	+	reliable	.426
15	9	+	careful	.391
			Factor II	
54	29	-	stubborn	.645
19	13	-	uninterested	.622
53	28	-	lazy	.621
39	21	-	rebellious	.620
50	26	-	a person who postpones	.569
106	43	-	impatient	.564
117	46	-	easily distracted	.515
4	3	-	inefficient	.489
40	22	-	nervous	.475
45	24	-	reckless	.467
113	44	-	passive	.461
102	41	-	inconsistent	.459
59	30	-	carefree	.397
23	15	-	different	.320

Note: Item No. 1 from the correlation matrix loaded .186 on both factors I and II.

*Column A numbers refer to the original 119 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

of rejecting involvement with educational tasks, either actively or passively. The factor items describe an individual who is educationally resistive.

Female Factors

The items, scoring direction, and loadings for the four WRL female factors are reproduced in Table 7.2. The first and third factors have all positive scoring item directions except for one item (different) on the third factor. The second and third factor have all negatively scored items except for one item (serious) on the second factor.

Factor I. The first female factor accounted for most of the items (29) and is similar in content to the first male factor. However, the items emphasizing intellect loaded highest. The items describe a girl who believes that the teacher would view her as bright, effective, goal oriented, and amenable to learning. The first female WRL factor was labeled the same as the first male factor--a girl who believes that the teacher views her as an academician.

Factor II. The second female factor is also similar in content to the second male factor but the eight items are ordered slightly different. The emphasis is on distractability, impatience, boldness, and resistence. The interpretation appears to be on emotional instability and was therefore labeled, emotionality.

Factor III. The third female factor had seven items which emphasized meeting the expectancies of the teacher. The label given to the third factor was conformity.

Table 7.2

Item Loadings on The Female Word Rating List Factors

Item Number* A	Item Number* B	Scoring Direction	Item	Loading
			Factor I	
76	31	+	above average	.739
67	29	+	intellectual	.681
12	5	+	smart	.676
77	32	+	productive	.657
13	6	+	successful	.653
115	45	+	efficient	.650
18	9	+	purposeful	.643
22	11	+	studious	.635
34	17	+	intelligent	.633
101	40	+	competent	.630
83	34	+	a thinker	.612
97	38	+	an achiever	.605
60	28	+	competitive	.596
2	1	+	talented	.595
33	16	+	consistent	.584
10	4	+	logical	.582
52	23	+	exacting	.566
98	39	+	a planner	.534
16	7	+	thorough	.526
85	35	+	ambitious	.498
118	47	+	reliable	.496
56	26	+	accepting	.489
103	41	+	teachable	.481
29	15	+	responsible	.467
55	25	+	perfectionistic	.427
71	30	+	alert	.414
96	37	+	concerned	.408
41	20	+	systematic	.395
5	2	+	practical	.384

Item Number* A	Item Number* B	Scoring Direction	Item	Loading
			Factor II	
46	117	-	easily distracted	.711
43	106	-	impatient	.610
21	42	-	daring	.589
18	35	-	distractable	.511
13	24	-	discontented	.460
24	54	-	stubborn	.447
22	50	-	a person who postpones	.434
48	119	+	serious	.353
			Factor III	
42	104	+	reasonable	.613
12	23	-	different	.606
8	17	+	orderly	.483
3	9	+	average	.480
44	107	+	friendly	.357
36	89	+	contented	.307
33	81	+	persuadable	.243
			Factor IV	
10	20	-	a procrastinator	.633
27	59	-	carefree	.388
19	40	-	nervous	.360
14	26	-	flighty	.327

*Column A numbers refer to the original 119 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

Factor IV. The four items of the fourth factor emphasize not meeting the expectancies built into completing a task. The word, "procrastinator", loaded on the fourth factor and the phrase, "a person who postpones", loaded on the second even though they are synonyms. It may well be that the fourth factor is related to the low motivation of high ability level girls because the word, "procrastinator" implies greater vocabulary sophistication than the synonym, "a person who postpones." The factor was labeled unreliability.

Summary of Interpretive Emphasis

The two male and four female factors are summarized in Table 7.3 with a brief description of the major elements in the factor.

Focusing Theory Based Human Trait Inventory

Originally, the plan was to only factor the 23 most discriminating HTI items. This was done with reluctance, because of the finding that the reliability estimate was lower than .80 for the discrepant achievers (males .78 and females .76). Towards the end of the project, the capacity of MISTIC was increased permitting larger matrices. Therefore, all items (32 male and 31 female) on the HTI which cross-validated at the .20 or less level of significance were used for the factor analysis. The reliability estimates were .81 and .80 for males and females, respectively, for the greater number of items. (The correlation matrices are reproduced in Tables G.3 and

Table 7.3

Interpretive Emphasis of The Male and Female Word Rating List Factors

	Name	Role Personified By Interpretive Emphasis
Male		
Factor I	Academician	The student sees himself through the teachers eyes as effective, bright, orderly, goal oriented, and amenable to learning.
Factor II	Educationally Resistive	The student sees himself through the teachers eyes as resisting involvement with educational tasks, either actively or passively.
Female		
Factor I	Academician	The student sees herself similarly to the first male factor, as bright, effective, orderly, goal oriented, and amenable to learning.
Factor II	Emotionality	The under-achieving student sees herself as distracted, impatient, bold, and resistent.
Factor III	Conformity	The achieving student sees herself meeting the expectancies of the school role.
Factor IV	Unreliability	The under-achieving student sees herself as having a tendency not to meet the expectancies of the school. (Probably a factor related to upper ability level girls because of the vocabulary required to understand "procrastinator".)

G.4, Appendix G.) For both sexes, a sample of 150 was used in the analysis (75 over-achievers and 75 under-achievers).

Ten male and 12 female factors met the sums-of-squares-in-excess-of-one criterion. Using the three-items-loading-on-a-factor criterion, six male and five female factors were identified. (The unrotated loadings are reproduced in Tables G.11 and G.12, Appendix G.)

Male Factors

The items, scoring direction, and factor loading for the six male HTI factors are summarized in Table 7.4.

Factor I. Because of the scoring direction, the first male factor is interpreted in the low motivation direction. The eight items are concerned with distractability and escapism which are all descriptive of high activity level. The factor was labeled agitation.

Factor II. The scoring direction of the seven items loading highest on factor two are interpreted in the high motivation direction because of their positive scoring direction. Most of the content describes high need to have carefully planned activities, particularly those related to school. Therefore, the factor was labeled academic compulsivity.

Factor III. The six items loading on the third factor are equally divided between negative and positive scoring. However, the majority of the highest loading items are in the negative direction leading to the interpretation in the low motivation direction. Essentially the items of the third factor describe an individual who has little interest and is at the point of rejecting school, seeks immediate pleasures,

Table 7.4

Item Loadings on The Male Human Trait Inventory Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	101	26	-	I have trouble waiting for a class to be over	.614
	66	13	-	I have a hard time concentrating on the subject during class periods	.614
	54	10	-	I find it difficult to find the time to study my assignments for the next day	.612
	68	15	-	Even when I do sit down to study I find that my mind tends to wander	.592
	29	4	-	It is difficult for me to keep interested in most of my school subjects	.592
	57	11	-	I have done something that is considered dangerous just for the thrill of it	.546
	69	16	-	I have to be in the mood before I can study	.535
	124	32	-	I would like to belong to a motorcycle club	.533
Factor II	110	28	+	I like to plan my activities in advance	.731
	89	22	+	I plan my activities in advance	.729
	75	19	+	I like to plan very carefully what courses I will take in school	.602
	122	30	+	I like to be consistent in the things I do	.578
	72	17	+	I like to make the best grades possible	.572
	60	12	+	I like just about everything about school	.508
	74	18	+	I like to study	.421
Factor III	52	8	-	Most of my school subjects are a complete waste of time	.714
	53	9	+	Most of my school subjects are useful	.586
	123	31	-	I like to go to the movies more than once a week	.551
	79	20	-	I have played hooky from school	.522
	105	27	+	I do get disgusted with myself if I don't do as well as I should	.426
	33	5	+	I like to read about science	.388

(Continued)

Table 7.4 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor IV	3	1	+	I worry about my grades	-.549
	120	29	-	I feel that I haven't any goals or purpose in life	.530
	50	7	-	I flirt	.459
	98	25	-	I work under a great deal of tension	.366
Factor V	93	23	+	I want very much to be a success	.559
	16	2	-	I have been quite independent and free from family rule	.429
	27	3	+	When I have an opinion, I stand up for it	.389
Factor VI	67	14	-	When I was a youngster I stole things	.733
	37	6	-	I have difficulty working under strict rules and regulations	.578
	85	21	-	My parents object to the friends I choose	.534
	96	24	-	When someone hurts my feelings I want to pay them back, just for the principle of the thing	.520

Note: Column A numbers refer to the original 125 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

and accepts his hedonistic nature. The item content was labeled academic negativism.

Factor IV. Three of the four items which loaded on the fourth male factor scored in the low motivation direction. Furthermore, none of the items loaded above .549. The interpretation was made in the direction of low motivation. The content describes an individual who feels little direction in life but at the same time has underlying tensions. The factor was given the label purposelessness.

Factor V. Two of the three items are positively loaded and are consequently interpreted in the high motivation direction. The content refers to a success orientation based on an attempt to prove self in face of family interference. This factor was labeled success drive.

Factor VI. The items on the final male factor are negatively loaded and are interpreted in the low motivation direction. The item content refers to a reaction to societal standards and deliberate rejection of norms characteristic of the psychopathic personality. This factor was labeled normlessness.

Female Factors

The items, scoring direction, and factor loading for the five female HTI factors are summarized in Table 7.5

Factor I. The first female factor loaded with all items scoring in the positive direction and was therefore interpreted as high motivation. Five of the seven items are identical to the second male HTI factor. The major content of the items similarly describe an individual with

Table 7.5

Item Loadings on The Female Human Trait Inventory Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	89	20	+	I plan my activities in advance	.742
	110	26	+	I like to plan my activities in advance	.681
	90	21	+	I think I would like the work of a teacher	.660
	74	15	+	I like to study	.630
	60	10	+	I like just about everything about school	.552
	75	16	+	I like to plan very carefully what courses I will take in school	.526
	59	9	+	My parents have been satisfied with their economic position	.449
Factor II	80	12	-	Even when I do sit down to study I find that my mind tends to wander	.735
	66	11	-	I have a hard time concentrating on the subject during class periods	.728
	29	5	-	It is difficult for me to keep interested in most of my school subjects	.595
	9	2	-	I daydream frequently	.504
	37	6	-	I have difficulty working under strict rules and regulations	.481
	120	29	-	I feel that I haven't any goals or purpose in life	.441
	102	23	-	I would be happier if I were able to travel around the country	.345
	118	28	-	Some subjects are so unpleasant to me that I can't talk about them	.221
Factor III	103	24	+	I would be uneasy if some of my family were in trouble with the police	.593
	105	25	+	I get disgusted with myself if I don't do as well as I should	.581
	122	30	+	I like to be consistent in the things I do	.562
	27	4	+	When I have an opinion, I stand up for it	.535
	53	8	+	Most of my school subjects are useful	.522
	72	13	+	I like to make the best grades possible	.442

(Continued)

Table 7.5 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor III (Cont.)	93	22	+	I want very much to be a success	.408
	11	3	+	I work things out for myself rather than have a friend show me how	.402
	73	14	-	A college education is unimportant to me	.244
Factor IV	50	7	-	I flirt	.679
	117	27	+	I like being with people in social gatherings	-.481
	82	18	-	I learn slowly	-.412
	84	19	+	It would be worthwhile to belong to several clubs or lodges	-.326
Factor V	80	17	-	I am said to be quick tempered	.624
	121	31	-	I would like to belong to a motorcycle club	.501
	5	1	-	Many times I become so excited I find it hard to go to sleep	.362

Note: Column A numbers refer to the original 125 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

high organizational needs that are fulfilled by participation in school activites, therefore, the factor was given the same name as that given the first male factor -- academic compulsivity.

Factor II. The eight items loading on the second female factor all score in the negative direction indicating a low motivation interpretation. The essence of the item content indicates problems of concentration eventually leading to withdrawal. The theme is largely an attempt to avoid the unpleasantness of the present by "getting away from it all". The factor was labeled fantasy.

Factor III. The interpretable items (eight out of nine) loading on factor three are all positive leading to a high motivation interpretation. The theme is filled with a concern for maintaining standards, either internal or external. Because the concepts describe a strain towards consistency in maintaining norms, the factor was labeled conservatism.

Factor IV. The four items loading on factor four divide equally between positive and negative scoring direction; however, the two of the three highest loading items are in the negative direction indicating a low motivation factor. The theme is primarily a lack of desire for or understanding of social interaction beyond a superficial level. Because the item, "I learn slowly," also loaded on this factor, a further interpretation that the factor is related to low ability might be made, and the factor was labeled social distance.

Factor V. The three items loading on the final female factor are all negative and are interpreted as low motivation in nature. The content describes lack of inner control, either temper or need for excitement. The fifth factor was labeled emotional instability.

Summary of Interpretive Emphasis

The six male and five female factor labels and brief description are summarized in Table 7.6.

Predictive Theory Based Generalized Situational Choice Inventory

The factor analysis of the GSCI was based on the responses of 100 combined over- and under-achievers for each sex. The 22 male and 23 female most discriminating items were used for the analysis. (The correlation matrices are reproduced in Tables G.9 and G. 11, Appendix G.) Six male and nine female factors met the sums-of-squares-in-excess-of-one criterion. (The unrotated loadings are reproduced in Tables G.10 and G.12.) Based on the requirement that at least three items load on a factor before the rotations were stopped, three male and five female factors were identified.

Male Factors

The items, scoring direction, and loadings for the three male GSCI factors are reproduced in Table 7.7.

Factor I. Eleven items loaded on the first male GSCI factor. The first four had the heaviest weighting and one fell below the .35 minimum criterion for interpretation. The theme of the item content

Table 7.6

Interpretive Emphasis of the Male and Female Human Trait Inventory Factors

	Name	Trait Description
Male		
Factor I	Agitation	Low motivation related to excitation, distractibility, and escapism.
Factor II	Academic Compulsivity	High motivation is related to high organizational needs which are directed towards school activities.
Factor III	Academic Negativism	Low motivation is related to academic disinterest to the point of rejection with emphasis on more hedonistic satisfaction of immediate needs.
Factor IV	Purposelessness	Low motivation is related to lack of feeling of direction with concomitant feelings of anxiety.
Factor V	Success Drive	High motivation for success is based on attempt to prove self as defense against family interference.
Factor VI	Normlessness	Low motivation is related to hostility towards social standards. Contains overtones of psychopathic characteristics.
Female		
Factor I	Academic Compulsivity	As with males, this factor describes high motivated dimensions related to high organizational needs which are fulfilled in school activities.
Factor II	Fantasy	Low motivation is related to withdrawing into a non-academic dreamworld which lacks stress norms.

(Continued)

Table 7.6 (Cont.)

	Name	Trait Description
Factor III	Conservatism	High motivation is related to a strain towards consistency in conforming to established norms, whether they are her own or others.
Factor IV	Social Distance	Low motivation is related to lack of desire for or understanding of social interaction beyond a superficial level. (Probably a factor related to the low ability underachieving female.)
Factor V	Emotional Instability	Low motivation is related to lack of inner control of either temper or need for excitement.

is concern with exceeding an external standard or doing as well as some average group. Therefore, the factor was labeled unique versus common accomplishment.

Factor II. Five items loaded heaviest on the second male GSCI factor with four exceeding the .35 criterion for interpretation. The content of the items is concern with having immediate material rewards or waiting for more enduring satisfactions. The factor was labeled immediate versus long term gratification.

Factor III. Six items loaded on the third male GSCI factor. All of the loadings were low in magnitude and the last item fell below the .35 criterion. The theme of the item content has overtones of competing with external standards or accomplishing with the least

Table 7.7

Item Loadings on The Male Generalized Situational Choice Inventory Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	37	3	1) *2)	Be well prepared for a job after graduation from high school, or Be well prepared to continue learning	.772
	141	20	*1) 2)	Study to go to college, or Study to get out of high school	.731
	52	7	*1) 2)	Get excellent grades because I have a great deal of ability, or Get average grades because I have average ability	.702
	132	19	*1) 2)	Wait until I had finished college and make a better salary, or Get a job right after high school and make a good salary	.701
	63	10	1) *2)	Do as well as most of my classmates, or Do better than most of my classmates	.676
	86	13	1) *2)	Have everybody in the class get a "C" at the beginning of the course, or Be graded at the end of the course with the possibility of getting a higher or lower mark	.509
	88	14	*1) 2)	Receive a grade on the basis of how much my teacher thinks I have learned, or Take a course from an instructor who only gives "C's"	.502
	50	6	*1) 2)	Be successful in finishing a job, or Finish a job	.421

*Indicates high motivated response direction.

(Continued)

Table 7.7 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor I (Cont.)	44	4	1) *2)	Have the teacher give everyone the same grade at the beginning of the term and know I had passed, or Take chances on getting a higher or lower grade at the end of the course	.417
	29	2	*1) 2)	Have the best teachers in the state in my school, or Have a large recreation center in my school	.410
	74	11	1) *2)	Work rapidly just "skimming" along, or Work slowly with great thoroughness	.296
Factor II	170	21	*1) 2)	Be very happy, or Have lots of money	.666
	81	12	1) *2)	Have a great deal of money, or Be an expert in my favorite school subject	.589
	104	16	*1) 2)	Study my assignments during study hall, or Wait to study until the mood strikes me	.588
	192	22	1) *2)	Discover a gold mine, or Discover a new medicine	.490
	110	17	*1) 2)	Think of an idea that nobody has ever thought of, or Set a world's speed record	.330

*Indicates high motivated response direction.

(Continued)

Table 7.7 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor III	21	1	*1) 2)	Receive a grade on the basis of how well I did on the teacher's test, or Get a grade on the basis of how hard I tried	.438
	45	5	*1) 2)	Develop a new product which may or may not be good, or Make a product as good as the best one available	.433
	56	8	1) *2)	Make quick decisions and sometimes be right and sometimes wrong, or Deliberate over decisions and usually be right	.413
	119	18	*1) 2)	Do what I think is right, or Do what others think is right	.408
	96	15	*1) 2)	Be paid for the amount of work I did, or Be paid by the hour	.380
	59	9	*1) 2)	Be allowed to take extra courses before or after school, or Just take courses offered during the school day	.313

Note: Column A numbers refer to the original 200 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

*Indicates high motivated response direction.

effort possible. The factor was labeled competition with versus ease of meeting a standard.

Female Factors

The items, scoring direction, and loadings for the five female GSCI factors are summarized in Table 7.8.

Factor I. Four items loaded heaviest on the first male GSCI factor. All items have fairly high loadings, particularly the first two. The content of the items has a theme related to academic activities. The high motivated female chooses the response leading to further education with a delay in immediate rewards, the low motivated female chooses those responses typified by desire for immediate reward with little extended involvement in education. The first female GSCI factor was labeled long term versus short term educational involvement.

Factor II. The second female GSCI factor had five items loading on it all above the .35 criterion. The first item loaded heaviest and the last two were close to the cut-off point for meaningful interpretation. The underlying theme of the item content is concern with the difficulty of accomplishment. The high motivated individual chooses the responses directed towards high effort with intellectual productivity, the low motivated individual chooses the responses which demand little immediate effort but might produce monetary returns. The factor was labeled high versus low task commitment.

Factor III. Four items loaded heaviest on the third female GSCI factor. All exceeded the .35 criterion. The content is concerned

Table 7.8

Item Loadings on The Female Generalized Situational Choice Inventory Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	141	18	*1) 2)	Study to go to college, or Study to get out of high school	.862
	132	17	*1) 2)	Wait until I had finished college and make a better salary, or Get a job right after high school and made a good salary	.831
	41	5	1) *2)	Pass a usual classroom examination, or Pass a college entrance examination	.690
	37	4	1) *2)	Be well prepared for a job after graduation from high school, or Be well prepared to continue learning	.612
Factor II	12	1	*1) 2)	Work hard for what I get, or Just get what I want	.836
	24	2	*1) 2)	Work hard to be smart, or Take it easy and become rich	.684
	167	19	1) *2)	Be known as being a "good guy" or a "good gal", or Be known as a person who "does things well"	.534
	104	14	*1) 2)	Study my assignments during study hall, or Wait to study until the mood strikes me	.384
	101	13	*1) 2)	Work hard in everthing I do, or Work at things as they come along	.378

*Indicates high motivated response direction.

(Continued)

Table 7.8 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor III	190	22	*1) 2)	Work hard enough to be outstanding, or Work hard enough to pass my courses	.661
	70	12	*1) 2)	Be known as a person with much ability, or Be known as a person with adequate ability	.651
	52	8	*1) 2)	Get excellent grades because I have a great deal of ability, or Get average grades because I have average ability	.599
	175	20	1) *2)	Do something like everyone else, or Do something outstanding	.520
Factor IV	57	10	*1) 2)	Be known to my parents as an intelligent person, or Be known to my parents as a practical person	.594
	33	3	1) *2)	Buy a car, or Continue my education	.542
	61	9	1) *2)	Receive money for good grades, or Have my picture in the paper for good grades	.471
	44	6	1) *2)	Have the teacher give everyone the same grade at the beginning of the term and know I had passed, or Take chances on getting a higher or lower grade at the end of the course	.458
	131	16	*1) 2)	Wait ten years and receive fame throughout the nation, or Receive fame in my community overnight	.409

*Indicates high motivated response direction.

(Continued)

Table 7.8 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor V	45	7	*1) 2)	Develop a new product which may or may not be good, or Make a product as good as the best one available	.669
	68	11	1) *2)	Have someone show me the solution to a problem, or Take a long time to figure out a problem for myself	.552
	129	15	1) *2)	Inherit a great deal of money, or Earn a great deal of money	.505
	200	23	1) *2)	Learn by defeating an experienced player, or Learn by losing to an expert	.454
	183	21	*1) 2)	Study for an exam one night and know that I would receive an "A", or Go to a part on this night and take a chance on a lower grade	.448

Note: Column A numbers refer to the original 200 consolidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

*Indicates high motivated response direction.

with accomplishment and has similar content to the second factor. However, there is less emphasis on the difficulty than there is on the uniqueness of it. Therefore, the third female factor was labeled unique versus common accomplishment.

Factor IV. Five items loaded heaviest on the fourth female OSCI factor. None of the loadings were exceptionally high or low. The theme is concerned with immediate or delayed action. The factor was labeled long term versus short term involvement.

Factor V. Five items loaded heaviest on the fifth female OSCI factor; all loadings were moderate in magnitude. The theme of the item content is concern with the source of direction in solving problems. The high motivated female chooses responses requiring a reliance on self, the low motivated individual wants others to take the lead in reducing the complexity of the task. The factor was labeled independence versus dependence in problem solving.

Summary of Interpretive Emphasis

The three male and five female factor labels and summary descriptions are reproduced in Table 7.9.

Predictive Theory Based Preferred Job Characteristics Scale

All of the 30 male and 23 female discriminating items were used on a sample of 100 combined over- and under-achievers for the factor analysis. (The inter-item correlation matrices are reproduced in

Table 7.9

Interpretive Emphasis of the Male and Female Generalized Situational Choice Inventory Factors

	Name	Task Description
Males		
Factor I	Unique Versus Common Accomplishment	The high motivated male chooses responses descriptive of unusual tasks for the typical male, the low motivated male chooses to do what most of his classmates will do.
Factor II	Immediate Versus Long Term Gratification	The high motivated male chooses responses describing delayed rewards, the low motivated male chooses the immediate rewards.
Factor III	Competition With Versus Ease of Meeting a Standard	The high motivated male chooses responses describing a standard as personal challenge, the low motivated male chooses the responses which require the least effort.
Females		
Factor I	Long Term Versus Short Term Educational Involvement	The high motivated female chooses responses which describe protracted academic plans, the low motivated female chooses the response avoiding future educational commitment.
Factor II	High Versus Low Task Commitment	The high motivated female chooses responses requiring effort and difficulty in completing a job, the low motivated female wants rewards but with little effort.

(Continued)

Table 7.9 (Cont.)

	Name	Task Description
Factor III	Unique Versus Common Accomplishment	The high motivated female chooses responses concerned with doing outstanding tasks, the low motivated female wants to do things like everyone else.
Factor IV	Long Term Versus Short Term Involvement	The high motivated female chooses responses indicating a tolerance for waiting for rewards, the low motivated female wants immediate and certain rewards.
Factor V	Independence Versus Dependence in Problem Solving	The high motivated female chooses responses which indicate a reliance on self for solving problems, the low motivated female looks to other's support.

Tables G.13 and G.15, Appendix G.) Five male and seven female factors had sums of squares in excess of one. (The unrotated factor loadings are reproduced in Tables G.14 and G.16, Appendix G.) Rotation on the factors was continued until three of them for each sex met the requirement that at least three items load on a factor.

Male Factors

The items, scoring direction, and loadings for the three male factors are reproduced in Table 7.10.

Factor I. Eleven items loaded heaviest on the first male PJCS factor. All exceeded the .35 level and most had fairly high loadings. The

Table 7.10

Item Loadings on The Male Preferred Job Characteristics Scale Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	36	11	1) *2)	A job where I make few if any decisions A job where I solve problems no one else can	.809
	28	7	1) *2)	A job which requires little thinking A job where I solve problems no one else can	.736
	49	15	1) *2)	A job which requires little thinking A job where my opinion is valued	.730
	43	13	*1) 2)	A job which has high work standards A job where I make few if any decisions	.676
	42	12	*1) 2)	A job where I could become known for outstanding accomplishments A job which requires little thinking	.632
	57	19	*1) 2)	A job where my opinion is valued A job where I make few if any decisions	.617
	50	16	1) *2)	A job where I make few if any decisions A job where I could become known for outstanding accomplishments	.615
	62	20	1) *2)	A job which does not require a college education A job where I could express my ideas, talents, and skills	.613
	24	5	1) *2)	A job which does not tie me down A job which absorbs my interests	.502

*Indicates high motivated response direction.

(Continued)

Table 7.10 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor I (Cont.)	29	8	*1) 2)	A job where I could decide how the work is to be done A job where I make few if any decisions	.498
	55	18	1) *2)	A job which does not require a college education A job where I could continue to learn the rest of my life	.471
Factor II	32	10	1) *2)	A job where I could not be fired A job which absorbs my interests	.765
	31	9	1) *2)	A job which does not tie me down A job where I could continue to learn the rest of my life	.701
	53	17	1) *2)	A job where I could not be fired A job where I could decide how the work is to be done	.693
	17	4	*1) 2)	A job where my opinion is valued A job where I could not be fired	.602
	44	14	1) *2)	A job with short working hours A job where I solve problems no one else can	.442
Factor III	5	2	1) *2)	A job which does not require a college education A job where I could decide how the work is to be done	.785
	26	6	*1) 2)	A job where I could become known for outstanding accomplishments A job which does not require a college education	.746

*Indicates high motivated response direction.

(Continued)

Table 7.10 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor III (Cont.)	12	3	*1) 2)	A job where I solve problems no one else can A job which does not require a college education	.734
	4	1	*1) 2)	A job where I solve problems no one else can A job which permits me to take days off when I want	.377

Note: Column A numbers refer to the original 64 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

*Indicates high motivated response direction.

theme of the item content is concern with the degree of commitment required by a job. The high motivated male responds to the alternatives indicating a need for 1) solving problems no one else can, 2) having his judgments valued, and 3) much commitment to job tasks. The low motivated males indicate a desire for responses directed towards few, or no, personal decisions, few personal ties with the job, and lack of college education. The total content appears to summarize in a label of high versus low job involvement.

Factor II. Five items loaded above the .35 cutting point on the second male PJCS factor. Again the theme is one of job involvement as was noted in the first male factor above. However, the added dimension of a time element gives a slightly different interpretation to the item grouping. The factor was labeled long term versus short term job involvement.

Factor III. Four items loaded heaviest on the remaining male PJCS factor. The first three had the heaviest loading, but all were above the .35 level. The themes of the item alternatives do not appear to present the precise continuum of the preceding two factors. The high motivated responses are concerned with independence within the job restrictions to the point of unusual task performance. The low motivated responses are all concerned with a job that does not require a college education, or being present on the job at specific times. The dimensions were given the label unique accomplishment versus avoidance of education.[3]

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[3] Part of the interpretation problem might have been avoided if the term, "college education" had not been used in the original draft of the item alternatives. "Further training" would have been more effective.

Female Factors

The items, scoring direction, and loadings for the three female factors are reproduced in Table 7.11.

Factor I. Ten items loaded heaviest on the first female PJCS factor. All exceeded the .35 level and most were fairly high in magnitude. The item content is similar to the third male PJCS factor. The first three male items are also represented on the first female factor. Therefore, this factor was given a label identical to the third male factor, *unique accomplishment versus avoidance of education*.

Factor II. Nine items loaded heaviest on the second female PJCS factor, all above the .35 level. The theme is similar in content to the second male PJCS factor, even though the items, with the exception of number forty-four are not identical. The time concept appears to be even more pronounced than it was for the male findings. This factor was also labeled *long term versus short term job involvement*.

Factor III. Four items loaded heaviest on the third, and final female factor. The loadings were fairly high except for the last item which fell below .35. This theme, as was the *first male factor, is one of* involvement; however, the involvement is specifically related to interests. The high motivated female chose responses which described jobs with an absorbing interest, while the low motivated female chose responses which indicated little commitment to the job, but a desire for a certain amount of security despite this lack of commitment. The factor was labeled *high versus low job interests*.

Table 7.11

Item Loadings on The Female Preferred Job Characteristics Scale Factors

	A	B	Scoring Direction	Item	Factor Loading
Factor I	12	4	*1) 2)	A job where I solve problems no one else can A job which does not require a college education	.770
	19	7	1) *2)	A job which does not require a college education A job which has high work standards	.766
	33	12	1) *2)	A job which does not require a college education A job where my opinion is valued	.717
	55	21	1) *2)	A job which does not require a college education A job where I could continue to learn the rest of my life.	.708
	26	9	*1) 2)	A job where I could become known for outstanding accomplishments A job which does not require a college education	.668
	48	17	1) *2)	A job which does not require a college education A job which absorbs my interests	.637
	5	2	1) *2)	A job which does not require a college education A job where I could decide how the work is to be done	.637
	62	23	1) *2)	A job which does not require a college education A job where I could express my ideas, talents, and skills	.623

*Indicates high motivated response direction.

(Continued)

Table 7.11 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor I (Cont.)	13	5	1) *2)	A job which pays well and requires little effort A job where I could decide how the work is to be done	.668
	53	19	1) *2)	A job where I could not be fired A job where I could decide how the work is to be done	.441
Factor II	23	8	1) *2)	A job with short working hours A job where I could continue to learn the rest of my life	.781
	59	22	1) *2)	A job which does not tie me down A job which has high work standards	.706
	30	10	1) *2)	A job with short working hours A job where I could express my ideas, talents, and skills	.665
	39	13	1) *2)	A job where I could not be fired A job where I could continue to learn the rest of my life	.639
	46	16	1) *2)	A job where I could not be fired A job where I could express my ideas, talents, and skills	.578
	54	20	*1) 2)	A job where I could express my ideas, talents, and skills A job which permits me to take days off when I want	.564
	10	3	*1) 2)	A job where I could become known for outstanding accomplishments A job where I could not be fired	.520

*Indicates high motivated response direction.

(Continued)

Table 7.11 (Cont.)

	A	B	Scoring Direction	Item	Factor Loading
Factor II (Cont.)	44	15	1) *2)	A job with short working hours A job where I solve problems no one else can	.508
	51	18	1) *2)	A job with short working hours A job which has high work standards	.411
Factor III	40	14	1) *2)	A job which permits me to take days off when I want A job which absorbs my interests	.769
	16	6	1) *2)	A job with short working hours A job which absorbs my interests	.750
	32	11	1) *2)	A job where I could not be fired A job which absorbs my interests	.629
	1	1	*1) 2)	A job where my opinion is valued A job with short working hours	.321

Note: Column A numbers refer to the original 64 unvalidated items in Appendix B and F.
Column B numbers refer to the correlation matrix item order of Appendix G.

*Indicates high motivated response direction.

Summary of Interpretative Emphasis

The three male and three female PJCS factor labels are summarized in Table 7.12 with a description of the major interpretative emphasis.

Summary

A factor analysis was made on the items from the four tests found to have validity in the previous analysis. The principal axis solution was used to factor the correlation matrices. Factors identified with a sum of squares in excess of one were rotated by the quartimax method until at least three items loaded on a factor. For males, two factors were identified for the Word Rating List, six for the Human Trait Inventory, and three for the Generalized Situational Choice Inventory and Preferred Job Characteristics Scale. For females, four factors were identified for the Word Rating List, five for the Human Trait Inventory and Generalized Situational Choice Inventory, and three for the Preferred Job Characteristics Scale.

Table 7.12

Interpretive Emphasis of the Male and Female Preferred Job Characteristics Scale Factors

Name		Description	
		High Motivated	Low Motivated
Males			
Factor I	High Versus Low Job Involvement	Solves problems no one else can thereby gains respect at job tasks to which he is committed	Avoids personal decisions and ties with a job lacking demand of college education
Factor II	Long Term Versus Short Term Job Involvement	Wants job requiring extended commitment	Wants little personal involvement with the job, but wants the security of knowing that job will be there for him when he wants it
Factor III	Unique Accomplishment Versus Avoidance of Education	Wants independence within the job as well as an opportunity for unusual performance	Wants a job which does not require a college education
Females			
Factor I	Unique Accomplishment Versus Avoidance of Education	(Identical to Male Factor III above)	
Factor II	Long Term Versus Short Term Job Involvement	(Identical to Male Factor II above)	
Factor III	High Versus Low Job Interests	Wants job which absorbs interests	Wants job with few demands, but one that will be available when it is needed

CHAPTER VIII

SUMMARY, CONCLUSIONS, AND DISCUSSION

Motivation is an evasive octopus which as an ever expanding spiral envelops the whole field of learning. Problems of vague definition, inadequate measuring devices, loosely developed theory, and limited research designs plague attempts to clarify the persistent problems of motivation study. Prevailing the struggle is a dream of concise operational definition leading to a reliable and valid measure. This report constitutes one more attempt to pursue the operational-definition-thus-measurement goal.

Purpose of the Project

The purpose of the project was to comprehensively study the motivational factors underlying achievement of eleventh grade high school students in nine cities in Michigan.

For the purpose of this research, academic motivation was defined as a combination of forces which initiate, direct, and sustain behavior toward a scholarly goal.

It was desired that the end product of the research would be 1) a measure of academic motivation, 2) an interpretable instrument (thus the need for theory), 3) an easily administered and scored instrument, 4) a device with theory fruitfulness which would permit exploration of the motivation complex, and 5) an objective measure screened through external validating and cross-validating groups.

Theory and Hypothesis Base

Hypotheses were developed at two levels (assuming focusing, predictive, and integrative levels). At Level One (focusing), past studies were gleaned to pin-point concepts for testing Null Hypotheses. More desirable would have been one-tailed tests; neither past research findings nor current theory development appeared to permit such luxury. Level One Hypotheses were used particularly in attempting to relate personality structure and self-concept to academic motivation. At this level the variables which might have a high likelihood of relating to the criterion were spot-lighted. Hypotheses developed at Level Two (predictive) require sufficient clarification to permit designating direction of alternate hypotheses--one-tailed tests. At this level McClelland's n-ach three factors were polarized and extended to predict extremes in academic motivation, i.e., need for (a) long-term versus short-term involvement; (b) unique versus common accomplishments; and (c) competing with a maximal versus a minimal standard of excellence.

The basic hypotheses of the study were:

Hypothesis I: High and Low motivated students will respond differently to items or questions designed on the basis of either focusing or predictive theory.

Hypothesis II: Scores based on tests derived from testing Hypothesis I will estimate grade point average better than chance and, when added to an aptitude predictor, will increase the precision of measurement.

Hypothesis III: Factor analysis of the items screened through tests of Hypothesis I will yield an interpretable structure which, for certain tests, will support the polar dimension theory of academic motivation.

Design

The above hypotheses were tested within the confines of a predictive study which involved 1) developing a battery of instruments, 2) administering the instruments to criterion groups, and 3) refining the battery. Furthermore, the personal and socio-economic background of the criterion sample was systematically examined by questionnaires.

Instrumentation. Six scales were developed. Two did not yield sufficient numbers of items to warrent retention after cross-validation--one that was designed to measure preferences for certain type teachers (Preferred Teacher Characteristics Scale) and the other to measure child rearing practices (Perceived Parental Attitude Inventory) related to high-low motivation.

Using Level One Hypotheses (focusing), two scales were developed--the Word Rating List (WRL) and the Human Trait Inventory (HTI). At Level Two Hypotheses (predictive) two other scales were developed--the Generalized Situational Choice Inventory (GSCI) and the Preferred Job Characteristics Scale (PJCS). Both of these latter forced-choice inventories were developed using the polarized and extended n-ach three facet theory.

Criterion Sample. To validate the experimental instruments, criterion groups of over- and under-achievers were identified to ascertain whether or not the items could significantly discriminate between these operationally defined extremes in motivation. For the purpose of the project, under-achievers were defined as those who achieved significantly lower than predicted from an aptitude measure and over-achievers as those who scored significanly higher than predicted.

The technique used for selecting over- and under-achievers involved a two stage regression model.

Stage One. Two aptitude measures were acquired for each student of the sample. (The Differential Aptitude Test-Verbal Reasoning and the California Test of Mental Maturity were used on the basis of availability.) A regression line was constructed which represented the average regression of the two aptitude variables. (This line is easily located by determining the point of intersection of the means and standard deviations of the two aptitude predictors.) Two lines were drawn parallel to the regression line and at a distance equivalent to the average of the standard error of estimate of the aptitude predictor. Only those individuals who fell within the limits described above were included for further analysis. The purpose of the procedure was to eliminate from the sample those individuals who scored erratically over a period of one year.

Stage Two. The aptitude predictor which correlated highest with the achievement criterion was used to build a regression line prediction of achievement. Parallel lines to the regression line were again drawn a standard error of estimate away. Those individuals falling at least one standard error of estimate above the regression line were designated over-achievers and those falling one standard error of estimate below the regression line were designated under-achievers.

The total number of individuals in each sub-category were randomly dichotomized to provide validation and cross-validation groups. The validation and cross-validation samples ranged from 62 to 95 for various classification of over- and under-achievers. As a result of poor test motivation, inability to follow directions, absenteeism, and attrition the sample was reduced. Therefore, equivalent numbers of individuals were not found in each category. In both the validation and cross-validation samples, more male under-achievers were lost than in any of the other six categories.

The achievement criterion--grade point average--reliability estimates were +.75 for males and +.80 for females.

Analysis Procedures. The 2 x 2 chi square contingency table model was used for all item discrimination and questionnaire response analyses (over- and under-achiever's response's to either of the two alternatives). Those scales employing a four point rating scale (never, sometimes, usually, and always) were arbitrarily dichotomized between sometimes and usually. The level of significance for the chi square analysis was set at .20 for validation and .10 for cross-validation.

Multiple regression analyses were conducted to determine the effect of adding the motivation measures to aptitude in predicting grade point average. Finally, the valid sub-scales were factor analyzed. The purpose of factoring was to 1) empirically determine the homogeneity of the scales and 2) provide a psychologically meaningful interpretation of the item content groupings for retheorizing about the nature of academic motivation.

Personal Data Questionnaire Results

The major findings of the analysis of the answers to the Personal Data Questionnaire were:

1. Under-achievers repeated grades more often than over-achievers.
2. Male under-achievers and female over-achievers tend to come from larger families than do their counterparts.
3. The sibling age span is greater for both male and female under-achievers than for over-achievers.
4. Over-achievers reported doing better in school than their siblings.
5. Over-achievers reported engaging in more activities than did under-achievers.
6. Over-achievers planned continuing some form of formal education more often than did under-achievers.
7. Over-achievers report more ties within the family, stricter discipline but discipline based on talking things over, and feelings of greater family approval of their academic record than do under-achievers.

8. Under-achieving males report more frequently that they and their mothers are non-affiliated with a church more frequently than do their over-achieving counterparts. Female under-achievers only report that their fathers are non-affiliated more frequently than do over-achievers.
9. Over-achievers reported that they liked language arts, mathematics, and science subjects more frequently than did under-achievers and English, mathematics, and science were reported as the hardest subjects for under-achievers.
10. Under-achieving females reported liking literature best.

Instrument Refinement

Proportionately, the highest number of items was retained in the Word Rating List after cross-validation. The greatest loss occurred in the Human Trait Inventory items. This finding for the Human Trait Inventory is not surprising when considering (a) the heterogeneous classification of discrepant achievement used in previous research from which the items were drawn, and (b) the necessary editing of the items to adapt the vocabulary to eleventh grade high school students. The number of items retained on all scales was beyond the number expected by chance. The four functioning tests were re-grouped and labeled the M-Scales.

Reliability of the M-Scales. Using a sample of 240, a Hoyt's analysis of variance reliability estimate of .94 for 139 male cross-validated items was obtained. A female sample of 240 yielded a comparable .93

reliability estimate on 136 cross-validated items. For the most part, the reliability estimates for the sub-scales and various defined groups of achievers attain a satisfactory level ($r = .68$ to .92 for males and .60 to .93 for females).

Educational-Occupational Status Analysis Results

The analysis of the educational-occupational status information (based on an index built from the weightings of mothers' and fathers' education and fathers' occupation) indicated that adding the index scores to DAT-VR and the M-Scales did not contribute to the estimation of the grade point criterion. The correlation of the index with grade point average, DAT-VR, and the M-Scales was, for the most part, either insignificant from zero or in the low positive range.

Validity of the M-Scales

Based upon a sample of 254 males and 261 females the validity estimates of the total M-Scales against grades was .56 and .40 respectively. The cross-validation estimates were .49 and .48 for males and females. The correlation of the sub-scales with the grade point criterion (GPA) follows the same pattern with the female correlations lower in magnitude than the males. The range was .27 to .42 for females and .32 to .51 for males.

Intercorrelation of Sub-Scales. The sub-scales correlate positively with each other indicating some measurement overlap. The range was from .32 to .51 for males and from .32 to .53 for females. The sub-scales findings for both sexes are comparable.

Multiple Regression and Correlation Estimation

Multiple regression equations were constructed to estimate grade point average from the four sub-scales, the total M-Scale, and the DAT-VR. Calculations were done separately for each sex.

All beta weights of the resultant equations were significantly different from zero at the .01 level or greater except for the PJCS sub-test and the cross-validated male total M-Scale. The two later tests were significant at the .05 level. The tests of significance of increase in precision of estimation by adding the M-Scales, either sub- or total tests, also indicated that in all cases adding the motivation scores to the DAT-VR increased the precision of estimation at the .01 level or greater except for the cross-validated male total scores which were significant at the .05 level of significance.

The multiple correlation based on the total M-Scales and DAT-VR estimates of grade point average was .69 and .73 for the male and .64 and .63 for the female validation and cross-validation samples.

Factor Analysis Results

Each of the four instruments which indicated some evidence of validity was subjected to factor analysis using the principal axis solution of the correlation matrices. The factors which had sums of squares in excess of one were rotated using the quartimax method. Rotation was continued until at least three items loaded on a factor. The labels assigned to the rotated factors are summarized in Table 8.1.

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Table 8.1

Summary of Factor Labels for All Four Tests for Each Sex

Test	Factor Labels			
	Factor	Males	Factor	Females
Word Rating List	I	Academician	I	Academician
	II	Educationally Resistive	II	Emotionality
			III	Conformity
			IV	Unreliability
Human Trait Inventory	I	Agitation	I	Academic Compulsivity
	II	Academic Compulsivity	II	Fantasy
	III	Academic Negativism	III	Conservatism
	IV	Purposelessness	IV	Social Distance
	V	Success Drive	V	Emotional Instability
	VI	Normlessness		
Generalized Situational Choice Inventory	I	Unique Versus Common Accomplishment	I	Long Term Versus Short Term Educational Involvement
	II	Immediate Versus Long Term Gratification	II	High Versus Low Task Commitment
	III	Competition With Versus Ease of Meeting a Standard	III	Unique Versus Common Accomplishment
			IV	Long Term Versus Short Term Involvement
			V	Independence Versus Dependence in Problem Solving
Preferred Job Characteristics Scale	I	High Versus Low Job Involvement	I	Unique Accomplishment Versus Avoidance of Education
	II	Long Term Versus Short Term Job Involvement	II	Long Term Versus Short Term Job Involvement
	III	Unique Accomplishment Versus Avoidance of Education	III	High Versus Low Job Interests

Conclusions

The project generated a number of conclusions all of which must be interpreted within the limits of the research design.

1. High and low motivated eleventh grade students, when operationally defined as over- and under-achievers, do respond with significant differences to a number of items designed to measure reflected self-concept, personality traits, and preference for certain types of occupational characteristics. Furthermore, the motivational extremes report a number of significant differences in demographic information.
2. Scores based on the valid items (labeled the M-Scales) estimate grade point average better than chance. Furthermore, the total and sub-scales have Hoyt's analysis of variance reliability estimates within an acceptable range.
3. When the scores of either the sub- or total test are added to the DAT-VR the precision of estimating the grade point criterion is significantly increased.
4. Comparable evidence of validity is found for both validation and cross-validation samples.
5. Interpretable factors are identifiable from the items of each of the four sub-tests which show some evidence of validity. For the two tests, the Generalized Situational

Choice Inventory and the Preferred Job Characteristics Scale, the original polar adaptation of McClelland's theory appeared to have logical utility in labeling the factor results.

6. Little relationship was found between an index of educational-occupational status and motivation, aptitude, or grade point average except for the over-achieving sample. This finding was undoubtedly heavily influenced by the high drop out rate of the under-achieving sample between tenth and eleventh grade.
7. The M-Scales were more valid for males than for females for the population studied. About 75 per cent of the valid items were common for both sexes. The finding of 25 per cent unique items would support the original decision to do all analyses separate for the sexes.

It appears that borrowing theory from the projective field and results from previous tests and studies, a reliable objective instrument with some indications of validity can be constructed. At this stage, the ground work is laid for a research instrument which may contribute to new understanding of the motivational complex.

Discussion

A study of this magnitude cannot help but raise more questions than it answers. And a major share of these questions point to a need for replication. At this point all that can be offered is the following evaluation of the major elements of the study. Each needs careful consideration by anyone attempting to evaluate this study for any purpose. This is particularly true if more research of this nature is contemplated.

The Major Underlying Assumptions

Assumptions, even when carefully designated, nag the conscience of the researcher of human behavior. He is never certain about whether the magnitude of the assumption is too great, allowing for the intervention of new variables which better, or equally well, explain the results.

Among the many assumptions made in the study, three represent major "jumps" in logic which need careful delineation. The first is the assumption that over- and under-achievement represents extremes in motivation. However, it is readily acknowledged that factors other than motivation may contribute to the observed discrepancies between over- and under-achievers, i.e., intelligence and educational-economic status. The cursory evidence of this study would indicate that neither of the above two variables alone adequately explains the obtained differences. Until further evidence indicates a change in interpretation, the assumption that a significant discrepancy between predicted and actual performance is in part, explained by motivation as a defensible and useful operationalism.

The second assumption which needs careful examination was the logical shift from the theory elements to item construction. The biases of the test construction team could not help being a contributing factor to the outcome. Assumptions of this nature have to be made when selecting or constructing items but there are ways of improving on the method employed in this study. The approach advocated by Guttman would have systematically done what was attempted within this design.

The third assumption, of course, concerns the naming of the factors. The researcher who uses factor analysis assumes that the mathematics of the analysis will organize the results in a meaningful manner so that inspection will clarify underlying themes. The limitation of this assumption is that various factor approaches produce different results and there is no final argument which states that one approach supersedes all others. The assumption was made for example, that the factors were orthogonal (uncorrelated). A strong case could be built for assuming that the factors were oblique (correlated). Arbitrariness permeated many of the factor analysis decisions. The value of the results can only be evaluated by their utility in future research.

The Grade Point Average Criterion

The use of grade point average as an achievement criterion can be defended on a number of grounds. However, the most important supporting aspect is its usefulness in predicting future academic grades. Then, too, consideration must be given to the fact that the individual must meet at least part of the teacher's expectancies if he is to survive in the formal academic environment. But these assumptions are not made without allowing for some of the severe limitations of teacher ratings (grades) as an estimate of academic achievement. Undoubtedly any grade point criterion is heavily contaminated with social nuances. The bias of the evaluator is often excessive because of the lack of independence in teacher decisions which are reflected in grades, i.e. teachers consult each other, past achievement records, and aptitude scores before making judgments. Upon careful examination, the wonder is that grade point average functions at all in predicting future grades.

A defensible argument could be advanced for using standardized tests to measure the achievement criterion. However, in most cases this would be conceding to a less precise estimate of future grades. One possible answer lies in developing a method of combining teacher and standardized estimates of achievement. At least future studies could determine the similarity of results obtained by using either of the above criteria.

Use of Eleventh Grade Sample

The rationale for using eleventh grade students was that at this level students were seriously considering either continuing or terminating their scholastic pursuits and the measurement, if it functioned, should be meaningful in making academic decisions. Eleventh grade was chosen in preference to twelfth grade because the schools would have at least a year and one-half to work with the individual if there were indications that he was being misdirected. The decision to use eleventh grade rather than tenth grade or below was made on the assumption that the older subjects were more mature and thus their perceptions would be more accurate. It would appear that in making the decision not enough weight was given to the fact that most drop-outs occur between tenth and eleventh grade when the student turns sixteen. The over-all effect of not including these individuals was to reduce the representation of lower socio-economic under-achievers and deflate the validity coefficients by increasing homogeneity.

The Design

A number of limits prevailed the total design. All tended to restrict the generalization of the results, some more severely than others.

Of course, the most obvious limit was the sample selection procedure. Selecting schools on the basis of a judgmental rather than a random model precluded that the results would only in the broadest sense be representative of Michigan or other schools.

A further limit was the post-dictive nature of the analysis. The M-Scales were administered in the eleventh grade and validated against ninth and tenth grades. Thus the student had the results of his previous experience available and the effect was probably to inflate the validity coefficients.

A further limitation was involved in the validity analysis. Because all over- and under-achievers were used in the validation of the individual items, some of these same individuals were again included in the validation and cross-validation analysis when general samples were drawn from the 4200 student population. The full value of these scales cannot be assessed until new independent samples are drawn and analyzed.

The Reliability Estimates

The use of Hoyt's analysis of variance reliability yielded optimum information for internal consistency estimates. However, test-re-test stability estimates are needed before the nature of this variance is more fully established.

The Research Instruments

The assumptions that discrepant achievers would prefer different types of teacher characteristics and that they report having experienced different child rearing practices were not supported by the analyses of this study. The exact reasons why the Perceived Parental Attitudes Inventory (PPAI) did not function are not clear at this point. There is some indication from other sources that the problem might lie in poor communication between parent and child. This is particularly possible in the case of the under-achiever. A comparison of the parent-child responses could yield some clarification of this problem. Then too, the results may have been confounded by asking the student to rate the items as his dominant parent would. Future considerations might be given to having separate ratings for mother and father.

Inspection of the responses to the Preferred Teacher Characteristics Scale indicated a strong bias on the part of all groups of discrepant achievers, in the direction of preferring affectively oriented teachers. A further criticism of this test, which is also applicable to the Preferred Job Characteristics Scale, is the repetitiousness of the items. The quasi-paired-comparison construction was often openly criticized by the students who felt that they were being asked to make the same decision too many times. The effect was probably to increase response set.

Another limiting aspect of the test construction, which was only incidently controlled, pertained to the semantics of the items. Vocabulary difficulty was not controlled other than an attempt to use words which were as simple as possible. In some instances, words which were obviously fairly difficult (e.g. procrastinator) were purposefully included. Other times, adolescent slang expressions were used (e.g. blah). It is interesting to note that some of the difficult words did discriminate (probably more on an aptitude rather than a motivation basis) and only a few of the slang expressions passed both validation and cross-validation testing. It probably was not wise to include slang because of its dialectal and transitory nature.

The other aspect of word usage which was not controlled was the social desirability of the alternates. Perhaps if the item stems had been balanced within a particular achievement category before the tests were administered, this effect could have been reduced. However, for the reasons previously mentioned in relation to the PTCS and PJCS, a system of balancing by repetition is probably not desirable for high school students.

The Theory

If the more stringent definitions of theory which prevail the philosophy of science literature are applied to the polar dimensions one must conclude that actually no theory was used. A more accurate label would probably be pre-, quasi-, or possibly middle-theory. Until the linkage of the elements of the theory is specified, it is presumptuous to label the rudimentary elements of a study of this nature theory. The factor analysis increased the number of dimensions, but merely increasing the quantity of the constructs, does not move elements over into the theory classification. Recognizing these limits, the following discussion of the factor findings is made.

The use of the findings of past studies to construct items for the Word Rating List and the Human Trait Inventory proved to be productive. The tentative interpretation that the self-concept is an intervening variable modifying stimuli, producing results which tend to be in the direction of the concept might be made at this point, i.e. high self-concept students tend to have high productivity and low self-concept students the converse. Particulary does this seem to be true for boys. An oblique factor rotation of the Word Rating

List items might provide more useful interpretation of this measure of relected self-concept.

The major components of the personality traits of the motivational extremes seems to be explained by a balance of control of anxiety against a lack of control for both sexes. The high motivated student responded to items describing an individual with anxieties, but with the ability to channel these anxieties towards constructive academic pursuits. The low motivated male chooses items describing generalized, pervasive, free floating anxiety which is reflected in activity level or hostility. The low motivated female chooses items descriptive of withdrawal. Both of these findings have much support from past studies.

The polar adaptation of McClelland's rudimentary theory appeared to have research utility in both item construction and factor interpretation. The failure to find all of the facets of McClelland's approach is no criticism of his postulates, but rather of the manner in which the items of this study were deduced from the theory.

Time seems to be one of the basic dimensions permeating most of the factors, particularly with reference to the ability to forestall rewards. The high motivated individual has a high tolerance for anticipating future rewards, the low motivated individual's capacity for time delay is extremely low. Much speculation could be made of this interpretation sociologically and anthropologically. Perhaps this personality ingredient is closely associated with his basic capacity to adjust to a "future" oriented culture.

The other pointed aspect of the predictive theory exploration was found in the unique accomplishment dimension. The high motivated individual tended to reject his group by standing out in a way valued by teachers. The low motivated individual tended to place negative value on being different from the group. This observation is particularly hard for secondary teachers to accept and probably accounts for much of the rejection teachers feel for low motivated students. On the other hand, the high motivated individual can only express his desire for unique accomplishment within certain well defined limits or he too is not rewarded.

Competition with a maximal versus a minimal standard of excellence did not emerge as one of the important ingredients of differences between high and low motivated students. The primary reason undoubtedly is linked to the original item construction. Actually, this dimension gave the most difficulty when attempting to build alternatives. On the other hand, the modification made in the factor labeling of "competition with versus ease of meeting a standard" might be more realistic. The high motivated individual wants to compete with standards, undoubtedly because he has been successful in past competition. The low motivated individual wants little involvement with the activities that have produced little reward value in the past. If he must interact, he only wants to do so when the chances for success is greater because the task is simple.

In summary, the polar adaptation of McClelland's motivational dimensions met the test of theory value in that it gave some evidence of utility in hypothesis formulation and interpretation of results. However, other dimensions which need careful consideration in replicating designs of this nature also appear to function within this complex.

The research of the preceding pages represents an attempt to study academic motivation. Part of the attempt was successful, part unsuccessful. For the gains made, the full impact of their stability and usefulness will only be assessed in future replications. The failures cannot be discarded as "blind alleys" for more clever designs and slight variations in structure may prove these approaches productive.

BIBLIOGRAPHY

Altus, William D. "A College Achiever and Non-Achiever Scale for the MMPI," *Journal of Applied Psychology*, 32:385-397, 1948.

Bell, Richard Q. and Schaefer, Earl S. *The Parental Attitude Research Instrument*, Laboratory of Psychology, National Institute of Mental Health, Bethesda, Maryland.

Brookover, W. B. "A Social Psychological Conception of Classroom Learning," *School and Society*, 8:84-87, 1959.

Cattell, Raymond B. *Factor Analysis*, New York: Harper and Brothers, 1952.

Coleman, Herbert A. "The Relationship of Socio-Economic Status to the Performance of Junior High School Students," *Journal of Experimental Education*, 9:61-62, 1940.

Cronbach, L. J. and Meehl, P. E. "Construct Validation in Psychological Tests," *Psychological Bulletin*, 52:281-302, 1955.

Diamond, S. *Information and Error*, New York: Basic Books, Inc., 1959.

Drews, Elizabeth Monroe and Teahan, John E. "Parents Attitudes and Academic Achievement," *Journal of Clinical Psychology*, XIII (October, 1957) 328-332.

Farquhar, Carolyn L. "A Study of the Relationship Between Socio-Economic Educational Level and Diagnosis of Reading Difficulty, Unpublished Master's thesis, Michigan State University, 1960.

Farquhar, William W. and Payne, David A. "A Comparison of Techniques Used in Selecting Under- and Over-Achievers," Unpublished Manuscript, Guidance and Personnel Services, Michigan State University, 1961.

Fricke, Benno G. "The Development of an Empirically Validated Personality Test Employing Configural Analysis for the Prediction of Academic Achievement, Unpublished Ph.D. dissertation, University of Minnesota, 1954.

Gough, H. G. "What Determines the Academic Achievement of High School Students," Journal of Educational Research, XLVI (January, 1953) 321-331.

Hagood, M. J. and Price, D. O. Statistics For Sociologists, New York: Henry Holt and Company, (Rev. Ed.).

Hoyt, Cyril J. "Test Reliability Estimated By Analysis of Variance," Psychometrika, 6:153-160, 1941.

Hurley, John. "The Child Behavior Inventory," Unpublished Manuscript, Psychological Clinic, Michigan State University.

Johnson L., Singer, S. and Stefflre, B. Vocational Values Inventory, Privately printed, Michigan State University, 1958.

Johnson, Palmer O. Statistical Methods in Research, New York: Prentice-Hall, Inc., 1949.

Krumboltz, John D. and Farquhar, William W. "The Effect of Three Teaching Methods on Achievement and Motivational Outcomes in a How-To-Study Course," Psychological Monographs, Vol. 71, No. 14, 1957.

Littman, Richard A. "Motives, History and Causes," Nebraska Symposium on Motivation, University of Nebraska Press, Lincoln, Nebraska, 1958, 114-168.

Lorr, M. and Jenkins, B. L. "Three Factors in Parent Behavior," Journal of Consulting Psychology, 17:306-308, 1953.

Lowther, Malcolm. "What is Over- and Under-Achievement?" School of Education Bulletin, University of Michigan, Ann Arbor, Michigan, April, 1962, 105-108.

McClelland, D., Atkinson, J., Clark, R. and Lowell, E. The Achievement Motive, New York: Appleton-Century-Crofts, 1953.

McClelland, D., Baldwin, A., Bronfenbrenner, U. and Strodtbeck, F. Talent and Society, Princeton, New Jersey: D. Van Nostrand Company, 1958.

McQuary, John J. and Truax, William E. "An Under-Achievement Scale," Journal of Educational Research, XLVIII (January, 1955) 393-409.

Martire, J. J. "Relationships Between the Self-Concept and Differences in Strength and Generality of Achievement Motivation," Journal of Personality, 24:364-375, 1955-56.

Milton, G. A. "A Factor-Analytic Study of Child-Rearing Behaviors," Child Development, 29:381-392, 1958.

Neuhaus, J. O. and Wrigley, C. F. "The Quartimax Method: An Analytical Approach to Orthogonal Simple Structure," British Journal of Statistical Psychology, VII (November, 1954) 89-91.

Roff, M. "A Factorial Study of the Fels Parent Behavior Scales," Child Development, 20:29-45, 1949.

Sears, R., Maccoby, E. and Levin H. Patterns of Child Rearing, Evanston, Illinois: Row Peterson, 1957.

Sewell, W. H. and Haller, A. O. "Social Status and The Personality Adjustment of the Child." Sociometry, 19:114-125, 1956.

Sewell, W. H., Mussen, P. H. and Harris, C. W. "Relationships Among Child Training Practices," American Sociological Review, 20: 137-148, 1955.

Shoben, Edward J. "The Assessment of Parental Attitudes in Relation to Child Adjustment," Genetic Psychology Monographs, 39:101-148, 1949.

Stefflre, B. "Concurrent Validity of the Vocational Values Inventory," Journal of Educational Research, LII (May, 1959) 339-341.

Thurstone, L. L. Multiple-Factor Analysis, University of Chicago Press, Chicago, Illinois, 1947.

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RELATED BIBLIOGRAPHY

Alexander, Chester. "Talent Vs. Performance," *Educational Research Bulletin*, XXXVII (October 8, 1958) 172-177.

Alexander, N. and Woodruff, R. "Determinants of College Success," *Journal of Higher Education*, 11:479-485, 1940.

Alper, Thelma. "Predicting the Direction of Selective Recall: Its Relation To Ego Strength and Non-Achievement," *Journal of Abnormal and Social Psychology*, 55:149-165.

Anderson, John R. "Do College Students Lack Motivation?" *Personnel and Guidance Journal*, XXXIII (December, 1954) 209-210.

Applezweig, M. H., Moeller, G. and Burdick, H. "Multimotive Prediction of Academic Success," *Psychological Reports*, 2:489-496, 1956.

Asher, E. J. and Gray, F. E. "Relation of Personal History Data to College Success," *Journal of Psychology*, 31:517-526, 1940.

Atkinson, John W. (ed.). *Motives in Fantasy, Action and Society*, Princeton, New Jersey: D. Van Nostrand Company, Inc., 1958.

Atkinson, John W. "The Achievement Nature and Recall of Interrupted and Completed Tasks," *Journal of Experimental Psychology*, 46: 381-390, 1953.

Ausubel, David P. "Prestige Motivation of Gifted Children," *Genetic Psychology Monographs*, 43:53-117, 1951.

Barbe, Walter B. "A Study of the Family Background of the Gifted," *Journal of Educational Psychology*, XLVII (May, 1956) 302-309.

Barnett, Stewart. "Level of Occupational Interest: Deadweight or Dynamism?" *Educational and Psychological Measurements*, 13:193, 1953.

Barrett, Harry O. "An Intensive Study of Thirty-Two Gifted Children," *Personnel and Guidance Journal*, 36:192-194, 1957.

Battle, H. J. "Relation of Personal Values to Scholastic Achievement," *Journal of the Exceptional Child*, 26:27-41, 1957.

Bayliss, Z. B. "A Study of the Factors Contributing to the Unsatisfactory Scholastic Attainment of First Year Women Students," Journal of Educational Research, 27:687-697, 1934.

Bell, F. B. "Do College Students of High Ability Perform to Capacity?" Unpublished Master's thesis, Purdue University, 1948.

Bendig, A. W. "Predictive and Postdictive Validity of Need-Achievement Measures," Journal of Educational Research, LII (November, 1958) 119-120.

Bendig, A. W. and Hughes, H. B. III. "Student Attitude and Achievement in a Course in Introductory Statistics," Journal of Educational Psychology, XLV (May, 1954) 268-276.

Berger, Irving L. and Sutker, Alvin R. "The Relationship of Emotional Adjustment and Intellectual Capacity to Academic Achievement of College Students," Mental Hygiene, XL (January, 1956) 65-77.

Berman, A. B. and Klein, A. "A Personality Study of Maladjusted Pupils of Superior Mentality," High Points, 24:57-63, 1942.

Bindra, Dalbir. Motivation: A Systematic Reinterpretation, New York: Ronald Press, 1959.

Blair, G. M. "Mentally Superior and Inferior Children in the Junior and Senior High School; A Comparative Study of Their Backgrounds, Interests, and Ambitions," Contributions To Education, Teachers College, Columbia University, 1938.

Borow, H. "A Psychometric Study of Non-Intellectual Factors in College Achievement," Ph.D. dissertation, Pennsylvania State College, 1945.

Borow, H. "Current Problems in the Prediction of College Performance," Journal of American Association of College Registrars, 22:14-26, 1946.

Brown, W. F., Abeles, N. and Iscoe, I. "Motivational Differences Between High and Low Scholarship College Students," Journal of Educational Psychology, XLV (April, 1954) 215-223.

Burns, Z. H. "Practice, Variability and Motivation," Journal of Educational Research, 30:403-420, 1937.

Carter, Harold D. "Methods of Learning As Factors in the Prediction of School Success," Journal of Psychology, 26:249-258, 1948.

Cattell, Raymond B. Personality and Motivation: Structure and Measurement, New York: World Book Company, 1957.

Cattell, Raymond B. and Baggaley, Andrew R. "The Objective Measurement of Attitude Motivation and Development and Evaluation of Principles and Devices," Journal of Personality, XXIV (June, 1956) 401-423.

Centi, Paul. "Highest and Lowest Ranking Students at the School of Education of a Large Urban University," Personnel and Guidance Journal, XXXVII (February, 1959) 457-459.

Centi, Paul. "Motivation and Scholastic Success," The Catholic Counselor, (Autumn, 1959) 23-26.

Champney, H. "The Measurement of Parent Behavior," Child Development, 12:131-166, 1941.

Champney, H. "The Variables of Parent Behavior," Journal of Abnormal and Social Psychology, 36:529-539, 1941.

Child, Irvin L. and Whiting, John W. M. "Effects of Goal Attainment: Relaxation Vs. Renewed Striving," Journal of Abnormal and Social Psychology, XLV (October, 1950) 667-681.

Clark, R. A., Teevan, R. and Ricciuti, H. N. "Hope of Success and Fear of Failure As Aspects of Need for Achievement," Journal of Abnormal and Social Psychology, 53:182-186, 1956.

Clark, Willis W. "Sex Differences in Mental Abilities Among Students of High Intelligence," California Journal of Educational Research, V (March, 1954) 90-93.

Cohler, Milton J. "A Comparative Study of Achievers and Non-Achievers of Superior Intelligence," Summary of Doctoral Dissertations, Northwestern University, IX (October, 1940) 74-79.

Corey, S. M. "Effect of Motivation Upon the Relationship Between Achievement and Intelligence," School and Society, 41:256-257, 1935.

Crandall, V. J., Preston, A. and Rabson, A. "Maternal Reactions and the Development of Independence and Achievement Behavior in Young Children," Child Development, 31:243-251, 1960.

Cronbach, L. J. "Studies of the Group Rorschach in Relation to Success in the College of the University of Chicago", Journal of Educational Psychology, 41:65-82.

Curtis, E. and Nemzek, C. "The Relation of Certain Unsettled Home Conditions to Academic Success of High School Pupils," Journal of Social Psychology, 9:419-435, 1938.

Darley, J. G. "Scholastic Achievement and Measured Maladjustment," Journal of Applied Psychology, 21:485-493, 1937.

Diamond, S. "A Neglected Aspect of Motivation," Sociometry, 2:77-85, 1939.

Diener, C. L. "Similarities and Differences Between Over-Achieving and Under-Achieving Students," Personnel and Guidance Journal, Vol. 38, No. 5, 396-400, 1960.

DiVesta, F. J. Woodruff, A. D. and Hertel, J. P. "Motivation as a Predictor of College Success," Educational and Psychological Measurement, 9:339-348, 1949.

Donahue, W. T., Coombs, E. H. and Travers, R. M. W. The Measurement of Student Adjustment and Achievement, Ann Arbor: University of Michigan Press, 1949.

Dowd, Robert Jr. "Underachieving Students of High Capacity," Journal of Higher Education, XXIII (June, 1952) 327-330.

Drasgow, James. "Underachievers," Journal of Counseling Psychology, Vol. 4, No. 3, 210-211, 1957.

Duff, O. L. and Siegel, L. "Biographical Factors Associated With Academic Over- and Under-Achievement," Journal of Educational Psychology, Vol. 51, No. 1, 43-46, 1960.

Dynes, R. R., Clarke, A. C. and Dinitz, S. "Levels of Occupational Aspiration: Some Aspects of Family Experience as a Variable," American Sociological Review, 21:212-215, 1956.

Edmiston, R. W. and Jackson, L. A. "The Relationship of *Persistence* to Achievement," Journal of Educational Psychology, 40:47-51, 1949.

Egner, R. E. and Obelsky, A. J. "Effect of Stereotyped Attitudes on Learning," Journal of Educational Psychology, XLVIII (April, 1957) 207-212.

Farquhar, William W., Payne, David A. and Thorpe, Marion D. The Michigan State M-Scales, U. S. Office of Education, May, 1961.

Fischer, R. P. "The Role of Frustration in Academic Under-Achievement: An Experimental Investigation," Journal of American Association of College Registrars, 18:227-238, 1943.

Fliegler, Louis A. "Understanding the Underachieving Gifted Child," Psychological Reports, III (December, 1957) 533-536.

Ford, Thomas R. "Social Factors Affecting Academic Performance: Further Evidence," School Review, 65:423-442, 1957.

Frankel, E. "A Comparative Study of Achieving and Under-Achieving High School Boys of High Intellectual Ability," Journal of Educational Research, 53:172-180, 1960.

French, Elizabeth G. "The Interaction of Achievement-Motivation and Ability in Problem Solving Success," Journal of Abnormal and Social Psychology, Vol. 57, No. 3, November, 1958.

French, Elizabeth G. "Some Characteristics of Achievement Motivation," Journal of Experimental Psychology, 50:232-236, 1955.

French, Elizabeth G. and Thomas, Francis H. "The Relationship of Achievement Motivation to Problem-Solving Effectiveness," Journal of Abnormal and Social Psychology, 56:45-48, 1958.

Frymier, Jack R. "Development and Validation of a Motivation Index: A Progress Report," Curriculum Research Bulletin No. 1, Orlando, Florida, February, 1961.

Frymier, Jack R. "Development and Validation of a Motivation Index: A Further Report," Curriculum Research Bulletin No. 9, Orlando, Florida, November, 1961.

Gallagher, James J. and Crowder, Thora. "The Adjustment of Gifted Children in the Regular Classroom: Case Studies," Exceptional Children, XXIII (May, 1957) 353-363.

Garrett, H. F. "A Review and Interpretation of Investigations of Factors Related to Scholastic Success in Colleges of Arts and Science and Teachers Colleges," Journal of Experimental Education, 18:91-138, 1949.

Gebhart, G. G. and Hoyt, D. T. "Personality Needs of Under- and Over-Achieving Freshmen," Journal of Applied Psychology, 42:125-128, 1958.

Gerberich, J. R. "Factors Related to the College Achievement of High-Aptitude Students Who Fail of Expectation and Low-Aptitude Students Who Exceed Expectations," Journal of Educational Psychology, XXXII (April, 1941) 253-265.

Getzels, Jacob W. "Social Values and Individual Motives: The Dilemma of the Gifted," School Review, LXV (March, 1957) 60-63.

Giles, H. Harry. Education and Human Motivation, New York: Philosophical Library, 1957.

Gilmore, J. V. "A New Venture in the Testing of Motivation," College Board Review, 15:221-226, 1952.

Goldberg, M. L. "Motivation of the Gifted," National Society for the Study of Education 57th Yearbook, Part II, 87-107, 1958.

Gough, H. G. "The Construction of a Personality Scale to Predict Scholastic Achievement," Journal of Applied Psychology, 37:361-366, 1953.

Gough, H. G. "Factors Relating to the Academic Achievement of High School Students," Journal of Educational Psychology, 40:65-78, 1949.

Gough, H. G. "The Relationship of Socio-Economic Status to Personality Inventory and Achievement Test Scores," Journal of Educational Psychology, 37:527-540, 1946.

Gowan, John C. "Dynamics of the Underachievement of Gifted Students," Exceptional Children, XXIV (November, 1957) 98-101, 122.

Gowan, John C. "The Underachieving Gifted Child -- A Problem for Everyone," Exceptional Children, 21:247-249, 270-271, 1955.

Griffths, G. R. "The Relationship Between Scholastic Achievement and Personality Adjustment of Men College Students," Journal of Applied Psychology, 29:360-367, 1945.

Gronlund, Norman E. and Whitney, Algard P. "The Relation Between Teachers' Judgments of Pupils' Sociometric Status and Intelligence," Elementary School Journal, LVIII (February, 1958) 264-268.

Haggard, Ernest A. "Socialization, Personality and Academic Achievement in Gifted Children," School Review, LXV (December, 1957) 388-414.

Harrison, C. C. "Achievement Motivation Characteristics of Negro College Freshmen," Personnel and Guidance Journal, XXXVII (October, 1959) 146-149.

Hartwick, B. W. and Stowell, M. "The Relation of Parental Attitude Over Attentiveness to Children's Work Habits and Social Adjustment in Kindergarten and First Six Grades of School," Journal of Educational Research, 30:169-170, 1936.

Havighurst, R. and Davis, A. "Social Class Differences in Child Rearing," American Sociological Review, August, 1955.

Heisler, Florence, "A Comparison Between Those Elementary School Children Who Attend Moving Pictures, Read Comic Books, and Listen to Serial Radio Programs to an Excess, With Those Who Indulge in These Activities Seldom or Not At All," Journal of Educational Research, 42:182-190, 1948.

Hepner, W. R. "Factors Underlying Unpredicted Scholastic Achievement of College Freshmen," Journal of Experimental Education, 7:159-198, 1939.

Herriott, M. E. "Attitudes As Factors of Scholastic Success," Bureau of Educational Research, University of Illinois, 47:1-72, 1929.

Hewer, Vivian H. "Vocational Interest - Achievement - Ability Inter-Relationships at the College Level," Journal of Counseling Psychology, Vol. 4, No. 3, 234-238, 1957.

Hieronymus, A. N. "Study of Social Class Motivation: Relationships Between Anxiety for Education and Certain Socio-Economic and Intellectual Variables," Journal of Educational Psychology, 42: 193-205, 1951.

Hills, John R. "The Measurement of Levels of Aspiration," Journal of Social Psychology, 41:221-229, 1955.

Hills, John R. "Needs for Achievement, Aspiration and College Criteria," Journal of Educational Psychology, Vol. 49, No. 1, 1958.

Hoffman, L. W., Rosen, S. and Lippitt, R. "Parental Coerciveness, Child Autonomy, and Child's Role at School," Sociometry, 23: 15-21, 1960.

Holland, John L. "The Prediction of College Grades From the California Psychological Inventory and the Scholastic Aptitude Test," Journal of Educational Psychology, L (August, 1959) 135-142.

Holland, John L. "Prediction of Scholastic Success for a High Aptitude Sample," School and Society, 86:290-293, 1958.

Hollingworth, L. S. "The Child of Very Superior Intelligence as a Special Problem in Social Adjustment," Mental Hygiene, 15:3-16, 1931.

Holtzman, W. H. and Brown, W. F. "Study Habits and Attitudes in the Prediction of Academic Success," American Psychologist, 8:369, 1953.

Hopkins, J., Malleson, N. and Sarnoff, I. "Some Non-Intellectual Correlates of Success and Failure Among University Students," British Journal of Educational Psychology, XXVIII (February, 1958) 25-36.

Horrall, Bernice M. "Academic Performance and Personality Adjustments of Highly Intelligent College Students," Genetic Psychology Monographs, LV (February, 1957) 3-83.

Horrall, Bernice M. "Relationships Between College Aptitude and Discouragement-Buoyancy Among College Freshmen," Journal of Genetic Psychology, 72:185-243, 1949.

Hoyt, Donald P. "Size of High School and College Grades," Personnel and Guidance Journal, XXXVII (April, 1959) 569-573.

Hoyt, Donald P. and Norman, Warren T. "Adjustment and Academic Predictability," Journal of Counseling Psychology, I (Summer, 1954) 96-99.

Irwin, Irl A. "Occupational Interest and the Prediction of Scholastic Success," Psychology Service Center Journal, 2:34-45, 1950.

Jacobs, James N. "Aptitude and Achievement Measures in Predicting High School Academic Success," Personnel and Guidance Journal, XXXVII (January, 1959) 334-341.

Jensen, Verg H. "Influence of Personality Traits on Academic Success," Personnel and Guidance Journal, XXXVI (March, 1958) 497-500.

Kagan, Jerome and Moss, Howard A. "Stability and Validity of Achievement Fantasy," Journal of Abnormal and Social Psychology, Vol. 58, No. 3, May, 1959.

Keislar, Evan R. "A Descriptive Approach to Classroom Motivation," Journal of Teacher Education, 11:310-315, 1960.

Kimball, Barbara, "Case Studies in Educational Failure During Adolescence," American Journal of Orthopsychiatry, XXIII (April, 1953) 406-415.

Kimball, Barbara, "The Sentence-Completion Technique in a Study of Scholastic Underachievement," Journal of Consulting Psychology, XVI (October, 1952) 353-358.

Kirk, Barbara, "Test Vs. Academic Performance in Malfunctioning Students," Journal of Consulting Psychology, 16:213-216, 1952.

Klausmeier, Herbert J., Lehmann, Irvin J. and Beeman, Alan, "Relationships Among Physical, Mental and Achievement Measures in Children of Low, Average and High Intelligence," American Journal of Mental Deficiency, LXIII (January, 1959) 647-656.

Krathwohl, William C. "Specificity of Over- and Under-Achievement in College Courses," Journal of Applied Psychology, XXXVI (April, 1952) 103-106.

Krug, R. E. "Over and Underachievement and the Edwards Personal Preference Schedule," Journal of Applied Psychology, XLIII (April, 1959) 133-136.

Krumboltz, John D. "Measuring Achievement Motivation - A Review," Journal of Counseling Psychology, Vol. 4, No. 3, 1957.

Krumboltz, John D. and Farquhar, William W. "Reliability and Validity of the Non-Achievement Test," Journal of Consulting Psychology, Vol. 21, No. 3, 1957.

Kurtz, John J. and Swenson, Esther J. "Factors Related to Over-Achievement and Under-Achievement in School, School Review, LVIX (November, 1951) 472-480.

Layman, J. W. and Boguslavsky, G. W. "The Relationship Between Ability and Achievement in the Army Specialization Training Program," Journal of Psychology, 18:45-54, 1944.

Levey, David. Maternal Overprotection, New York: Columbia University Press, 1943.

Lewis, W. D. "A Comparative Study of the Personalities, Interests, and Home Backgrounds of Gifted Children of Superior and Inferior Educational Achievement," Journal of Genetic Psychology, 59:207-218, 1941.

Lindzey, G. E. and Goldberg M. "Motivational Differences Between Male and Female as Measured by the Thematic Apperception Test," Journal of Personality, 22:101-117, 1953.

Lum, M. "A Comparison of Under- and Over-Achieving Female College Students," Journal of Educational Psychology, 51:109-114, 1960.

Lynch, William W. "An Approach to the Study of Motivational Problems in Education," Bulletin of School of Education, Indiana University, Vol. 31, No. 2, 1955.

McBee, G. and Duke, R. L. "Relationship Between Intelligence, Scholastic Motivation, and Academic Achievement," Psychological Reports, 6: 3-8, 1960.

McClelland, D. (ed.). Studies in Motivation, New York: Appleton-Century-Crofts, 1955.

McQuary, John P. "Some Differences Between Under- and Over-Achievers in College," Journal of Educational Research, XL (February, 1954) 117-120.

McQuary, John P. "Some Relationships Between Non-Intellectual Characteristics and Academic Achievement," Journal of Educational Psychology, XLIV (April, 1953) 215-228.

Malloy, John. "An Investigation of Scholastic Over- and Under-Achievement Among Female College Freshmen," Journal of Counseling Psychology, Vol. 1, No. 4, 260-263, 1954.

Maslow, A. H. "A Theory of Human Motivation," Psychological Review, 50:370-396, 1943.

Maslow, A. H. Motivation and Personality, New York: Harper and Brothers, 1954.

Mayo, G. D. and Manning, W. H. "Motivation Measurement," Educational and Psychological Measurement, Vol. 21, No. 1, 73-83, 1961.

Merrill, B. "A Measurement of Mother-Child Interaction," Journal of Abnormal and Social Psychology, 41:37-49. 1946.

Merrill, R. M. and Murphy, D. T. "Personality Factors and Academic Achievement in College," Journal of Counseling Psychology, 6: 207-210, 1959.

Meyers, R. C. and Schultz, D. G. "Predicting Academic Achievement With a New Attitude-Interest Questionnaire," Educational and Psychological Measurements, 10:654-655, 1950.

Michael, W. B., Jones, R. A. and Trembly, W. A. "The Factored Dimensions of a Measure of Motivation for College Students," Educational and Psychological Measurements, 19:667-671, 1959.

Middleton, George Jr. and Gutherie, George M. "Personality Syndromes and Academic Achievement," Journal of Educational Psychology, L (April, 1959) 66-69.

Miller, A. J. "Is the Exceptionally Able College Student Socially Maladjusted?" School and Society, 45:862-864, 1937.

Miller, Robert V. "Social Status and Socio-Empathic Differences Among Mentally Superior, Mentally Typical and Mentally Retarded Children," Exceptional Children, XXIII (December, 1956) 114-119.

Mitchell, James V. "An Analysis of the Factorial Dimensions of the Achievement Motivation Construct," Journal of Educational Psychology, Vol. 52, No. 4, 1961.

Mitchell, James V. "Goal-Setting Behavior as a Function of Self-Acceptance, Over- and Under-Achievement, and Related Personality Variables," Journal of Educational Psychology, L (June, 1959) 93;104.

Moore, W. H. "Measuring Student Motivation," Journal of Higher Education, 13:269-271, 1942.

Morgan, Henry H. "A Psychometric Comparison of Achieving and Non-Achieving College Students of High Ability," Journal of Consulting Psychology, 16:292-298, 1952.

Munger, Paul F. and Goerkerman, Robert W. "Collegiate Persistence of Upper and Lower-Third High School Graduates," Journal of Counseling Psychology, Vol. 2, No. 2, 142-145, 1955.

Munroe, R. "Diagnosis of Learning Disabilities Through a Projective Technique," Journal of Consulting Psychology, 13:390-395, 1949.

Musselman, John W. "Factors Associated With the Achievement of High School Pupils of Superior Intelligence," Journal of Experimental Education, 11:53-69, 1942-43.

Myers, R. C. "Biographical Factors and Academic Achievement: An Experimental Investigation," Educational and Psychological Measurement, 12:415-426.

Neidt, C. O. and Merrill, W. R. "Relative Effectiveness of Two Types of Response to Items of a Scale on Attitudes Toward Education," Journal of Educational Psychology, 42:432-436.

Nemzek, C. L. "The Value of Certain Non-Intellectual Factors for Direct and Differential Prediction of Academic Success," Journal of Social Psychology, 12:21-30, 1940.

Owens, W. A. and Johnson, Wilma C. "Some Measured Personality Traits of Collegiate Under-Achievers," Journal of Educational Psychology, 40:41-46, 1949.

Parrish, J. and Rethlingshafer, D. "A Study of the Need to Achieve in College Achievers and Non-Achievers," Journal of Genetic Psychology, 50:209-226, 1954.

Passow, A. Harry and Goldberg, M. L. "Study of Underachieving Gifted," Educational Leadership, XVI (November, 1958) 121-125.

Phillips, Erving Lakin. "A Note on the Use of the Term Over-Achievement in Guidance and Personnel Work," Journal of Educational Psychology, XXXIV (May, 1943) 300-306.

Pierce, James V. "The Educational Motivation Patterns of Superior Students Who Do and Do Not Achieve in High School," Final Research Report, U. S. Office of Education Cooperative Project #208-7136, November, 1959.

Powell, Gail F. "A Comparative Study of College Students with High and Low Grades," Education, L (May, 1930) 537-542.

Ramharter, Hazel K. and Johnson, Harry C. "Methods of Attack Used by 'Good' and 'Poor' Achievers in Attempting to Correct Errors in Six Types of Subtraction Involving Fractions," Journal of Educational Research, 42:586-597, 1949.

Robinowitz, Ralph, "Attributes of Pupils Achieving Beyond Their Level of Expectancy," Journal of Personality, XXIV (March, 1956) 306-317.

Roesslein, Rev. Charles G. "Differential Patterns of Intelligence Traits Between High-Achieving and Low-Achieving High School Boys," Ph.D. dissertation, Catholic University Press, 1953.

Rosen, Bernard C. "The Achievement Syndrome: A Psycho-Cultural Dimension of Social Stratification," American Sociological Review, XXI (April, 1956) 203-211.

Rosen, Bernard C. "Race, Ethnicity, and the Achievement Syndrome," American Sociological Review, XXIV (February, 1959) 47-60.

Rosen, Bernard C. and D'Andrade, Roy. "The Psychosocial Origins of Achievement Motivation," Sociometry, XXII (September, 1959) 185-218.

Rust, Ralph M. and Ryan, F. J. "The Strong Vocational Interest Blank and College Achievement," Journal of Applied Psychology, XXXVIII (October, 1954) 341-345.

Ryan, F. J. and Davie, J. S. "Social Acceptance, Academic Achievement and Academic Aptitude Among High School Students," Journal of Educational Research, LII (November, 1958) 101-106.

Sarason, Irwin G. "Effect of Anxiety and Two Kinds of Motivating Instruction on Verbal Learning," Journal of Abnormal and Social Psychology, LIV (March, 1957) 166-171.

Sarbin, T. R. "A Contribution to the Study of Actuarial and Individual Methods of Prediction," American Journal of Sociology, 48:593-602, 1943.

Scates, D. E. and Scates, Alice Y. "Developing a Depth Questionnaire to Explore Motivation and Likelihood of Action," Educational and Psychological Measurement, 12:620-631, 1952.

Schlesser, G. E. "Gains in Scholastic Aptitude Under Highly Motivated Conditions," Journal of Educational Psychology, 41:237-242, 1950.

Schoonover, Sarah M. "The Relationship of Intelligence and Achievement to Birth Order, Sex of Sibling, and Age Interval," Journal of Educational Psychology, L (August, 1959) 143-146.

Schreier, Fred T. Human Motivation: Probability and Meaning, Glencoe, Illinois: Free Press, 1957.

Schubert, Delwyn G. "A Comparative Study of Retarded and Unselected College Readers with Respect to Certain Study Habits, Attitudes, and Personality Traits," Journal of Educational Research, XLVI (February, 1953) 471-474.

Schultz, Douglas G. and Ricciuti, Henry W. "Level of Aspiration Measures and College Achievement," Journal of Genetic Psychology, 51:257-275, 1954.

Schwilck, Gene L. "Academic Achievement of Freshmen High School Students in Relationship to Class Load and Scholastic Aptitude," Personnel and Guidance Journal, XXXVII (February, 1959) 455-456.

Seashore, Harold. "Tenth Grade Tests as Predictors of Twelfth Grade Scholarship and College Entrance Status," Journal of Counseling Psychology, Vol. 1, No. 2, 106-115, 1954.

Shaw, M. C. "Need Achievement Scales as Predictors of Academic Success," Journal of Educational Psychology, Vol. 52, No. 6, 282-285, 1961.

Shaw, M. C. "Talented Underachievers," California Guidance Newsletter, Vol. 14, No. 3, November, 1959.

Shaw, M. C. and Brown, Donald J. "Scholastic Underachievement of Bright College Students," Personnel and Guidance Journal, XXXVI (November, 1957) 195-199.

Shaw, M. C. and Grubb, J. "Hostility and Able High School Underachievers," Journal of Counseling Psychology, Vol. 5, No. 4, 263-266, 1958.

Shaw, M. C. and McCuen, J. T. "The Onset of Academic Under-Achievement in Bright Children," Journal of Educational Psychology, 51:103-108, 1960.

Sheldon, Paul M. "The Families of Highly Gifted Children," Marriage and Family Living, XVI (February, 1954) 59-60,67.

Stacey, Chalmers L. and DeMartrio, Manfred F. (eds.). Understanding Human Motivation, Cleveland: Howard Allen, 1958.

Stagner, R. "The Relation of Personality to Academic Aptitude and Achievement," Journal of Educational Research, 26:648-660, 1933.

Starrak, J. A. "Matching Ability with Achievement," Journal of Higher Education, 8:315-320, 1937.

Stivers, Eugene. "Motivation for College in High School Boys," The School Review, Department of Education, University of Chicago, Autumn, 1958, 341-350.

Strodtbeck, F. "Implications of the Study of Family Interaction for the Prediction of Achievement," Child Study, 35:14-18, 1958.

Stuit, David B. "Differential Characteristics of Superior and Inferior Students," School and Society, XLVI (December 4, 1957) 733-736.

Summer, F. C. and Johnson, E. E. "Sex Differences in Levels of Aspiration and in Self-Estimates of Performance in a Classroom Situation," Journal of Psychology, 27:483-490, 1949.

Thistlethwaite, Donald L. "College Press and Student Achievement," Journal of Educational Psychology, L (October, 1959) 183-191.

Thistlethwaite, Donald L. "Effects of Social Recognition Upon the Educational Motivation of Talented Youth," Journal of Educational Psychology, L (June, 1959) 111-116.

Truesdell, Albert B. and Math, John A. "Clinical and Actuarial Predictions of Academic Survival and Attrition," Journal of Counseling Psychology, Vol. 4, No. 1, 50-53, 1957.

Tyler, H. T. "The Bearing of Certain Personality Factors Other Than Intelligence on Academic Success," Contributions to Education, No. 468, Teachers College, Columbia University, 1931.

Tyler, Leona E. "Studies on Motivation and Identification of Gifted Pupils," Review of Educational Research, XXVII (October, 1957) 391-399.

Uhlinger, C. A. and Stephens, M. W. "Relation of Achievement Motivation to Academic Achievement in Students of Superior Ability," Journal of Educational Psychology, 51:259-266, 1960.

Upshall, C. C. and Masters, Harry V. "Differences Between Good and Poor College Students Chosen on the Basis of College Entrance Scores," Educational Administration and Supervision, XXXIX (October, 1933) 507-510.

Verhoff, Joseph, Wilcox, Sue and Atkinson, John W. "The Achievement Motive in High School and College Age Women," Journal of Abnormal and Social Psychology, XLVIII (January, 1953) 108-119.

Vogel, W., Raymond, S. and Lazarus, Richard. "Intrinsic Motivation and Psychological Stress," Journal of Abnormal and Social Psychology, Vol. 58, No. 2, March, 1959.

Volberding, Eleanor, "Characteristics of Successful and Unsuccessful Eleven-Year-Old Pupils," Elementary School Journal, University of Utah, 49:405-410, 1949.

Walsh, Ann M. "Self-Concepts of Bright Boys with Learning Difficulties," Bureau of Publication, Teachers College, Columbia University, 1956.

Washburne, Norman F. "Socio-Economic Status, Urbanism and Academic Performance in College," Journal of Educational Research, LIII (December, 1959) 130-137.

Wedemeyer, Charles A. "Gifted Achievers and Non-Achievers," Journal of Higher Education, XXIV (January, 1953) 25-30.

Weitz, Henry and Wilkinson, H. Jean. "The Relationship Between Certain Non-Intellective Factors and Academic Success in College," Journal of Counseling Psychology, Vol. 4, No. 1, Spring, 1957.

White, Robert W. "Motivation Reconsidered: The Concept of Competence," Psychological Review, LXVI (September, 1959) 297-333.

Williams, John E. "Mode of Failure, Interference Tendencies and Achievement Imagery," Journal of Abnormal and Social Psychology, 51:573-580.

Wilson, Frank T. "Working With the Motives of Gifted Children," Elementary School Journal, LVII (February, 1957) 247-252.

Wilson, John. "Achievement, Intelligence, Age and Promotion Characteristics of Students Scoring at or Below the 10th Percentile on the California Test of Personality," Journal of Educational Research, LII (April, 1959) 283-292.

Winberg, Wilma A. "Some Personality Traits of Collegiate Under-Achievers," Proceedings of the Iowa Academy of Science, 54: 267-270, 1947.

Winterbottom, M. "The Relationship of Childhood Training in Independence to Achievement Motivation," Ph.D. dissertation, University of Michigan, 1953.

Wolf, S. J. "Historic Background of the Study of Personality as it Relates to Success or Failure in Academic Achievement," Journal of Genetic Psychology, 19:417-736, 1948.

Woodruff, A. D. "Motivation Theory and Educational Practice," Journal of Educational Psychology, 40:33-40, 1949.

Worell, Leonard. "Level of Aspiration and Academic Success," Journal of Educational Psychology, L (April, 1959) 47-54.

Wrenn, C. Gilbert and Humber, Wilbur J. "Study Habits Associated with High and Low Scholarship," Journal of Educational Psychology, XXXII (November, 1941) 611-616.

Zander, Alvin and Van Egmond, Elmer. "Relationship of Intelligence and Social Power to the Interpersonal Behavior of Children," Journal of Educational Psychology, XLIX (October, 1958) 257-268.

APPENDIX A

SUMMARY OF RESEARCH CHARACTERISTICS OF STUDENTS REPRESENTING ACADEMIC EXTREMES

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SUMMARY OF CHARACTERISTICS OF OVER- AND UNDER-ACHIEVERS

Compiled by W.W. Farquhar; D.A. Payne; W.H. Chubb; M.D. Thorpe

The Research reported herein was performed pursuant to a contract with the U.S. Office of Education, Department of Health, Education and Welfare.

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Male and Female		Male and Female	
1. Spent less time at movies and reading optional assignments	Gerberich*	1. Manic (hypomania)	Altus*
2. Spent more time in sleep, meals and classroom	Gerberich	2. Unwillingness to conform to academic requirements	Brown, Ables
3. Felt teachers fair	Gerberich	3. Activity delay (lack of decisiveness to action, tendency to procrastinate)	Brown, Ables
4. Liked teachers	Gerberich	4. Does not value school	Holland '59
5. Liked classes	Gerberich	5. Impulsive	Holland '59
6. Prompt with school work	Gerberich	6. Less intense super-ego qualities	Holland '59
7. Frequent leader	Wedemeyer	7. Positive self concepts	Holland '59
8. Studied more, better study techniques and habits	Dowd, Neel	8. Are socially adept	Holland '59

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*Refer to separate bibliography available from present investigators.

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Male and Female		Male and Female	
9. Higher reading comprehension	Dowd	9. Greater difficulty in using study techniques	Gerberich
10. Greater grasp of mechanics of English	Dowd	10. Greater difficulty in paying attention in class	Gerberich
11. Introversiveness reaching pathological proportions	Horrall '57	11. Felt they had not gotten the material things in life they wanted from their parents	Shaw & Brown
12. Marked lack of emotional responsiveness	Horrall '57	12. Hypercritical	Shaw & Brown
13. Less controlled emotional responsiveness	Horrall '57	13. Avoid leadership role	Wedemeyer
14. Give evidence of inner tension (Ror m)	Horrall '57	14. Unwise distribution of time	Dowd
15. Feel they are more adequate people (TAT)	Horrall '57	15. Disliked courses and professors.	Dowd
16. Experience less conflict about school performance (TAT)	Horrall '57	16. Feel they do not have efficient study habits	Neel
17. Experience less conflict about health (TAT)	Horrall '57	17. Have masculine interests	Holland '59

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Male and Female		Male and Female	
18. Experience less conflict about personal achievement (TAT)	Horrall '57	18. Poorer form perception (Ror F-)	Horrall '57
19. Experience less conflict about mother's behavior (TAT)	Horrall '57	19. More extensive feelings of discouragement and apprehension (TAT)	Horrall '57
20. More adequate adjustment (TAT)	Horrall '57	20. Feel more inferior to their fathers (TAT)	Horrall '57
Male		Male	
21. Higher need for achievement	Gebhart	21. Higher need for affiliation	Gebhart
22. Higher need for intraception	Gebhart	22. Higher need for change	Gebhart
23. Higher need for order	Gebhart	23. Science worst subject	McQuary '54
24. Higher need for consistency	Gebhart	24. Have interests of persons in business detail occupations	Morgan
25. Parents have less formal education	McQuary '54	25. Tendency to depression	Owens
26. Realistic	Morgan	26. Too socially oriented and active	Owens

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects_		College Subjects_	
Male		Male	
27. Insightful	Morgan	27. Not enough time spent studying	Owens
28. High integrity	Morgan	28. Spent more hours in extra curricular work	Divesta
29. Dependable	Morgan	29. Less often reviewed their notes the same day they were taken	Divesta
30. Responsible	Morgan	30. Felt they could not organize their notes well	Divesta
31. Have interests typical of social service	Morgan	31. Felt their courses less necessary for their purposes	Divesta
32. High interest maturity	Morgan	32. Had less often been away from home	Divesta
33. Are more dominant	Morgan	Female	
34. Persuasive	Morgan	33. Father perceived on less successful figure	Malloy
Female		34. Does not select challenging goals	Malloy
35. Obtains ego satisfaction through academic work	Mitchell		
36. Not competitive	Mitchell	35. Disciplined more frequently	Malloy

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Female		Female	
37. Conservative goal setting	Mitchell	36. Conformist	Malloy
38. Feelings of unworthiness	Mitchell	37. Feel socially inadequate	Malloy
39. Associates with other over-achievers	Malloy	38. Date less	Malloy
40. Family fosters independence	Malloy	39. Mother shields daughter from criticism of father	Malloy
41. Disciplined less frequently	Malloy	40. Does not value grades	Malloy
		41. Poor self concept	Malloy
42. High level of aspiration	Malloy	42. Works only on subjects interested in	Malloy
43. Likes school	Malloy	43. Family uses special rewards for performance	Malloy
44. Good self concept	Malloy	44. Associates with other under-achievers	Malloy
45. Is non-conformist	Malloy	45. Can fulfill ego needs in non-academic areas	Mitchell
46. Father perceived as successful figure	Malloy	46. Unrealistic goal setting	Mitchell
47. Family does not give special reward for academic success	Malloy	47. Defensive	Mitchell

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		**College Subjects**	
Female		**Female**	
48. Persistent	Malloy	48. High manifest anxiety	Mitchell
High School Subjects		**High School through College Subjects**	
Male and Female		**Male and Female**	
49. Usually oldest or youngest sibling	Musselman	49. Vague occupational and academic choices	Gowan '57
50. Smaller families	Musselman	50. Weak ego controls	Gowan '57
51. Higher socio-economic status	Musselman	51. Socially withdrawn	Gowan '57
52. Father was significant figure	Pierce	52. Poor use of time and money	Gowan '57
53. Had mothers who held higher educational aspirations	Pierce	53. Lack of competency in reading and arithmetic	Gowan '57
54. Tend to come from small families and be first born or only child	Pierce	54. More frequently display psychotic or neurotic tendencies	Gowan '57
55. Had parents who were better educated	Pierce	55. Have authoritarian parents	Gowan '57
56. Mothers dominating and ignoring	Drews	56. Immature	Gowan '57

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male and Female	
57. Parents more punitive	Drews
58. Home role rigidly defined with expectancies of docile acceptance	Drews
59. Denial of ill-will and animosity	Gough '53-4
60. Absence of interpersonal friction	Gough '53-4
61. Accepting of others	Gough '53-4
62. Higher on leadership skills	Pierce
63. Better peer identification	Pierce
64. Adult standards unquestioned	Drews
65. Conforming	Drews, Gough '53-4
66. Has good study habits	Gough '53-4

CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School through College Subjects	
Male and Female	
57. Lack of goals or unrealistic goals	Gowan '57
58. Lack of responsibility	Gowan '57
59. No serious interests	Gowan '57
60. Disinterest in others	Gowan '57
61. Submissive	Gowan '57
High School Subjects	
Male and Female	
62. Unable to create warm relationships	Fliegler
63. Tended to be more unsocial	Fliegler
64. Dislikes people - parental figures, authority figures, siblings, and peers	Fliegler
65. Familial pattern of indifference and rejection	Fliegler

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male and Female	
67. Has sense of academic effectiveness	Gough '53-4
68. Value high grades	Pierce
69. Adjust to reality demands of classroom	Drews
70. Capacity for sustained and diligent application	Gough '53-4
71. Like planfulness	Gough '53-4
72. Basic seriousness of purpose	Gough '53-4
73. Has sense of accomplishment	Gough '53-4
74. Docile	Drews
75. Orderly	Drews
76. Emphasizes equanimity and rationality	Gough '53-4
77. Integrative mind and personality	Gough '53-4
78. Great vitality	Gough '53-4

CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male and Female	
66. Father more often absent from home	Passow
67. Do not expect good grades	Passow
68. More maladjustment	Pierce
69. Higher "Manic" score on MMPI	Gough '49-2
70. Higher "Psychopathic deviate" score on MMPI	Gough '49-2
71. Higher "Psychotheuia" score on MMPI	Gough '49-2
Male	
72. Negative relationship with fathers	Kimball '52
73. Less able to give direct effective expression to their negative feelings	Kimball '52
74. Guilt and anxiety about aggressive feelings	Kimball '52
75. Attitudes of hostility	Shaw & Grubb

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male and Female	
79. Personally efficient	Gough '53-4
80. Rejection of the frivolous and diversionary	Gough '53-4
81. Self-control	Gough '53-4
82. Optimistic, self-confident	Gough '53-4
83. Compensating for handicaps	Musselman
84. Better adjusted psychologically	Pierce
85. Higher monetary goals	Pierce
86. Occupational interest maturity higher (on SVIB)	Gough '53-4, Kurtz
87. More active in religious areas	Pierce
Male	
88. Have mothers who are more democratic	Pierce

CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male	
76. More aggressive	Pierce
Female	
77. Had mothers who were more authoritarian	Pierce
Elementary through High School Subjects	
Males and Females	
78. Limited and vague educational and vocational plans	Kurtz
79. More desire to work with hands than book learning	Kurtz
80. More frequently have sex problems	Kurtz
81. More lack of self-confidence	Kurtz
82. More unhappy	Kurtz
83. More restless	Kurtz
84. More changeable	Kurtz

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Male	
89. Higher needs for achievement	Pierce
Female	
90. Better adjusted emotionally	Musselman
91. High need for individual recognition	Pierce
Elementary through High School Subjects	
Male and Female	
92. Want to please parents and respect them	Kurtz
93. Have parents who show interest, pride, affection	Kurtz
94. Good opinion of self	Kurtz
95. Derive satisfaction from book learning	Kurtz
96. Original	Kurtz
97. Exhibit leadership qualities	Kurtz

CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Elementary Subjects	
Male and Female	
85. Often find cultural deficiency	Lewis
86. More adventuresome	Lewis
87. Less self-reliant	Lewis
88. Less investigative	Lewis
89. Less original	Lewis
90. Less dependable	Lewis

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Elementary through High School Subjects			
Male and Female			
98. Parents demand good adjustment among family members	Kurtz		
Elementary Subjects			
Male and Female			
99. Smaller families	Lewis		
100. Come from superior homes, (Profs., semi-profs.)	Lewis		
101. Intellectual hobbies (reading, collecting)	Lewis		
102. Interested in music	Lewis		
103. Generous	Lewis		
104. Physically energetic	Lewis		
Male			
105. Feeling of belongingness in relation to parents	Walsh		
106. Freedom of and adequacy of emotional expression	Walsh		
107. Feel free to initiate achievement	Walsh		

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SUMMARY PERSONALITY CHARACTERISTICS OF OVER (AND HIGH)- AND UNDER (AND LOW)- ACHIEVERS

Compiled by Ronald G. Taylor[1]

The Research reported herein was performed pursuant to a contract with the U. S. Office of Education, Department of Health, Education and Welfare

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Males and Females		Males and Females	
1. Obtains ego satisfaction through academic work	Mitchell '59	1. Fulfill ego needs in other than academic area	Mitchell '59
2. Motivational system not characterized by a strong sense of competitiveness	Mitchell '59	2. Lacks motivation	Mitchell '59 Holland '59
3. Have feelings of unworthiness	Mitchell '59 Holland '59	3. Chronic non-achievement	Mitchell '59
4. Conservative goal setting	Mitchell '59	4. Free floating and high anxiety	Mitchell '59 Horrall '57
5. Over-compensates	Mitchell '59	5. Defensive behavior	Mitchell '59
6. Study more than non-achievers (have good study technique)	Dowd '52 Gerberich '41	6. Unwise distribution of time and need inspiration to study	Dowd '52 Lum '60
7. Get assignments in promptly	Gerberich '41	7. Tend to dislike courses and professors	Dowd '52 Lum '60

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CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Males and Females		Males and Females	
8. Like most of their classes and instructors, feel they get a "square deal" in class	Gerberich '41	8. Goals inconsistent with measured interests	Dowd '52
9. Choose subjects because of interest and/or aptitude	Hopkins-Molleson, & Sornoff '58	9. Greater difficulty in paying attention in class	Gerberich '41
10. Achievement motivated by drive for power	Middleton & Gutherie '59	10. Greater difficulty in using study techniques	Gerberich '41
11. Achievement motivated by resentment	Middleton & Gutherie '59	11. Recognize a greater degree of difference in difficulty between high school and university work than is true of the high scholarship group.	Gerberich '41
12. Achievement motivated by dependence	Middleton & Gutherie '59 Merrill & Murphy '59	12. Came to college for social reasons and strong affiliation need	Gerberich '41 Hopkins-Molleson, & Sornoff '58 Gebhart & Hoyt '58
13. Achievement motivated by social acceptance	Middleton & Gutherie '59	13. Chose subjects because of parental pressure or as a means to a profession	Hopkins-Molleson, & Sornoff '58

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Males and Females		Males and Females	
14. Achievement motivated by aggression	Middleton & Gutheris '59	14. Decide on their careers at a much earlier age than others (this decision would be more heavily influenced by parent's aspirations)	Hopkins-Molleson, & Sornoff '58 Mitchell '59
15. Interests typical of persons in social service or welfare	Morgan '52	15. Less confident of occupation choice than other students	Hopkins-Molleson, & Sornoff '58
16. Interest maturity higher (males only)	Morgan '52	16. Trend toward pleasure seeking	Middleton & Gutheris '59
17. Dominant	Morgan '52 Merrill & Murphy '59	17. Trend toward extroversion	Middleton & Gutheris '59
18. Drive to organize and plan life (males only)	Gebhart & Hoyt '58 Diener '60 Krug '59	18. Trend toward denial of normal shortcomings	Middleton & Gutheris '59
19. Consistent (males only)	Gebhart & Hoyt '58	19. Trend toward power seeking and acceptance	Middleton & Gutheris '59
20. Optimistic (males only)	Morgan '52	20. Interests of persons in business detail occupations (males only)	Morgan '52

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Males and Females		Males and Females	
21. Persuasive (males only)	Morgan '52	21. Interests of persons in business sales occupations (males only)	Morgan '52
22. Dependable and responsible (males only)	Morgan '52 Holland '59	22. Overly critical of others	Shaw & Brown '57
23. Seriousness of purpose (males only)	Morgan '52	23. Feelings of hostility to authority	Shaw & Brown '57
24. Energetic (males only)	Morgan '52	24. Unstable and maladjusted	Stagner '33 Horrall '57
25. Self-confident	Morgan '52 Lum '60	25. High emotionality	Stagner '33
26. Insightful and realistic attitudes (males only)	Morgan '52	26. High self-sufficiency	Stagner '33
27. Awareness of and concern for other person (males only)	Morgan '52 Gebhart & Hoyt '58	27. Lacks decisiveness to act	Brown, Abeles & Iscoe '54
28. Motivation to achieve or need for achievement	Morgan '52 Lum '60 Gebhart & Hoyt '58 Krug '59	28. Tends to procrastinate	Brown, Abeles & Iscoe '54 Lum '60

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects_		College Subjects_	
Males and Females		Males and Females	
29. Lack of capacity for status	Holland '59	29. Unwilling to conform to academic requirements	Brown, Abeles & Iscoe '54
30. Are unsociable	Holland '59 Horrall '57 Merrill & Murphy '59 Krug '59	30. Psychoneurosis with compulsive and depressive features	Kirk '52
31. Minimize worry and complaints	Holland '59	31. Tend to be resistant to externally imposed tasks	Kirk '52
32. Conscientious	Holland '59	32. Self-derogation and depression	Kirk '52
33. Well-controlled	Holland '59 Horrall '57 Lum '60	33. Hysterical personality	Kirk '52
34. Create a favorable impression	Holland '59	34. Conflict over conduct	Horrall '57
35. Does well academically under direction but is not as adept in situations demanding independent judgment	Holland '59	35. Conflict over sex	Horrall '57
36. Interested in and responsive to feelings of others	Holland '59	36. Have feelings of inadequacy	Horrall '57

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects		College Subjects	
Males and Females		Males and Females	
37. Have feminine interests	Holland '59 Krug '59	37. Greater concern about health	Horrall '57
38. Feel comfortable about their conduct in general	Horrall '57	38. Immature reaching out for contact experience	Horrall '57
39. Feel comfortable in the area of sex	Horrall '57	39. Are poised and socially skillful	Holland '59
40. Feel adequate as a person	Horrall '57	40. Have positive self-attitudes	Holland '59
41. Display more inner tension	Horrall '57	41. Are flexible	Holland '59
42. More deferent	Merrill & Murphy '59	42. Admit worries and complaints	Holland '59
43. Less exhibitionistic	Merrill & Murphy '59	43. Have less intense super ego qualities	Holland '59
44. Less concerned about change	Merrill & Murphy '59	44. Is impulsive	Holland '59
45. More enduring	Merrill & Murphy '59 Krug '59	45. Creates a less favorable impression	Holland '59
46. Less controlled emotional responsiveness-marked lack of emotional responsiveness	Horrall '57	46. More extraceptive and masculine interests	Holland '59

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
College Subjects_		College Subjects_	
Males and Females		Males and Females	
47. Good over-all adjustment	Horrall '57	47. Social service drive	Gebhart & Hoyt '58
48. Less conflict about own school performance	Horrall '57	48. Need for change	Gebhart & Hoyt '58
49. Less deep underlying anxiety	Horrall '57	49. Artistic interests and temperament	Diener '60
50. More mature affect	Horrall '57	High School Subjects_	
High School Subjects_		Males and Females	
Males and Females		50. Chose future occupation because of influence of others	Armstrong '55
51. Optimistic self-confidence	Gough '53 Kurtz & Swenson '51 Gowan '57	51. Had future vocational goals which did not agree with their dominant interests as measured by Kuder Voc.	Armstrong '55
52. Self control	Gough '53 Gowan '57		
53. Capacity for sustained and diligent application	Gough '53	52. Obtained greater number of low scores on the Computational Scale of Kuder Voc.	Armstrong '55
54. Acceptance of convention	Gough '53	53. Obtained more low scores in the area of "Preference for avoiding conflict" on Kuder Personal	Armstrong '55

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects		High School Subjects	
Males and Females		Males and Females	
55. Rejection of the frivolous and diversionary	Gough '53	54. Obtained lower ratings on cooperation, dependability and judgment	Armstrong '55
56. Orderliness	Gough '53	55. Preferred companions older than themselves (males only)	Armstrong '55
57. Planfulness	Gough '53	56. Were not chosen to positions of responsibility in extra-curricular activities (females only)	Armstrong '55
58. Basic seriousness of purpose	Gough '53 Gowan '57	57. Much underlying agression, seldom expressed or indirectly expressed (males only)	Kimball '53
59. Personal and intellectual efficiency	Gough '53 Pierce '59	58. Strong feelings of inferiority, passivity, prominent dependency needs (males only)	Kimball '53
60. Vitality	Gough '53	59. Almost deliberate failure. (with inferiority feelings) (males only)	Kimball '53
61. Acceptance of others	Gough '53 Gowan '57 Pierce '59		

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects		High School Subjects	
Males and Females		Males and Females	
62. Denial of ill-will and animosity	Gough '53	60. Defensive about abilities and anxious to maintain a belief in their own superiority (males only)	Kimball '53
63. Achievement oriented via conformance	Pierce '59	61. Negative attitude toward education in general (males only)	Kimball '53
64. Achievement via independence	Pierce '59	62. Show greater tendency toward feminine identification than normal achievers (males only)	Kimball '53
65. More flexible	Pierce '59	63. Agression, more overt in early childhood, little direct outlet for hostile feelings (males only)	Kimball '53
66. Absence of interpersonal friction	Gough '53	64. Choose friends with low achievement or unfavorable attitude toward school	Kurtz & Swenson '51
67. Emphasis on equanimity and rationality	Gough '53	65. Restless	Kurtz & Swenson '51
68. Sense of academic effectiveness	Gough '53	66. Changeable	Kurtz & Swenson '51
69. Good study habits	Gough '53		
70. Sense of accomplishment	Gough '53		

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects		High School Subjects	
Males and Females		Males and Females	
71. Peer relations plentiful and supportive	Kurtz & Swenson '51	67. Unhappy	Kurtz & Swenson '51
72. Choose friends whose standards of school achievement is also high	Kurtz & Swenson '51	68. Lack confidence in themselves	Kurtz & Swenson '51 Gowan '57
		69. Have problems of hetero-sexual adjustment	Kurtz & Swenson '51
73. Relatively high opinion of themselves	Kurtz & Swenson '51	70. Would rather do something with their hands than book-learning	Kurtz & Swenson '51
74. Exhibit qualities of leadership	Kurtz & Swenson '51	71. Have limited and vague educational and vocational aims	Kurtz & Swenson '51
75. Originality and creativity	Kurtz & Swenson '51 Gowan '57	72. Hostility isa pronounced characteristic (males only)	Shaw & Grubb '58
76. Academically inclined, happy in classroom situation	Kurtz & Swenson '51	73. Stronger activity interests as opposed to intellectual (males only)	Terman & Oden '47
77. Derive satisfaction from book-learning	Kurtz & Swenson '51	74. Asocial behavior	Gough '55

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Males and Females	
78. Have high educational and vocational goals	Kurtz & Swenson '51
79. Relate school work to future goals	Kurtz & Swenson '51
80. Tend to regard education for more than its job value	Kurtz & Swenson '51
81. Doubt and confusion in areas of family and peer acceptance may cause them to strive harder for academic achievement	Robinowitz '56
82. Tend toward stronger intellectual and social interest (males only)	Terman & Oden '47
83. Clear and definite academic/occupational choices	Gowan '57
84. Positive character integration	Gowan '57

CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects	
Males and Females	
75. Unclear and indefinite academic and occupational choice	Gowan '57
76. Weak ego controls	Gowan '57
77. Withdrawal and self-sufficiency	Gowan '57
78. Psychotic and neurotic tendencies	Gowan '57
79. No goal or impossible goals	Gowan '57
80. Immature, irresponsible	Gowan '57
81. Disinterest in others	Gowan '57
82. Apathetic withdrawal	Gowan '57
Elementary Subjects	
Males	
83. Feel restricted, hemmed in	Walsh '56
84. Feel helpless	Walsh '56

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
High School Subjects		Elementary Subjects	
Males and Females		Males	
85. Permissiveness, intraception	Gowan '57	85. Express exaggerated, free-floating emotion or repress all emotion when some emotional response seems appropriate	Walsh '56
86. Dominance, persuasiveness	Gowan '57		
87. Enthusiastic, socialized, activity-oriented view of life	Gowan '57 Pierce '59	86. Feel rejected or isolated	Walsh '56
Elementary through High School Subjects		87. Act defensively, either through compliance, evasion or escape, or blind rebellion and negativism	Walsh '56
Males and Females			
88. Emotional maturity positively related to relative achievement	Cohler '40		
Elementary Subjects			
Males			
89. Free to make choices	Walsh '56		
90. Free to initiate activities	Walsh '56		
91. Freedom and adequacy of emotional expression	Walsh '56		

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Elementary Subjects			
Males			
92. Present feeling of belongingness	Walsh '56		
93. Engage in constructive purposive, and resourceful activities	Walsh '56		

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SUMMARY OF CHARACTERISTICS OF PARENT CHILD RELATIONSHIPS AND GENERAL HOME ENVIRONMENT OF OVER (HIGH) AND UNDER (LOW) ACHIEVERS

Compiled by David A. Payne[1]

The Research reported herein was performed pursuant to a contract with the U. S. Office of Education, Department of Health, Education and Welfare

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male		**Male**	
Mother_		**Mother_**	
1. Mothers more democratic	Pierce	1. More intrusive	Pierce
2. Mothers of high-achieving males were non-authoritarian	Pierce	2. Close attachment to mother	Kimball '53
3.			
3. Mother wants child to do well in competition	Winterbottom	3. Avoidance of mother	Pierce
4. Mother wants son to make own decisions	Winterbottom	4. Mother attempts to accelerate development	Pierce
5. Mother wants son to have interests of his own	Winterbottom	5. Mother suppresses talk of sex	Pierce
6. Mother wants son to be active and energetic	Winterbottom	6. Mother tends to exclude outside influences	Pierce
7. Mother wants son to do well in school	Winterbottom	7. Mother avoids communication	Pierce

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[1] College of Education, Michigan State University. Dr. Payne is now affiliated with Syracuse University, Syracuse, New York.

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male		Male	
Mother		Mother	
8. Mother wants son to show pride in his ability to do well	Winterbottom	8. Mother is very strict	Pierce
9. Wants son to make his own friends	Winterbottom	9. Mother attempts to break childs will	Pierce
10. Mother wants son to be a leader	Winterbottom	10. Mother fosters dependency	Pierce
11. Mother wants son to try difficult tasks for himself	Winterbottom	11. Mother restricts who child will play with	Winterbottom
12. Mother wants son to stand up for his own rights with others	Winterbottom	12. Mother does not let son stay out after dark	Winterbottom
13. Physical demonstration of affection by mother	Winterbottom	13. Approves of activity	Pierce
		Father	
14. Mother most significant contribution to achievement training	Rosen & D'Andrade	14. Poor father son relationship	Kimball '53
15. Mother warm and accepting yet dominant	Rosen & D'Andrade	15. Negative relationship with father (distant, strict disciplinarian, dominating)	Kimball '53
		Mother and Father	
16. Mother perceived as imposing her standards on son	Rosen & D'Andrade	16. Deification	Pierce

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male		Female	
Mother		Mother	
17. Mother rejecting yet empathetic resulting in independence of child	Rosen & D'Andrade	17. Mother protects her from criticism of father	Malloy
Father			
18. Father less rejecting	Rosen & D'Andrade	18. Feels family disciplines her more than parents of friends	Malloy
		Mother and Father	
19. Father less coercive	Rosen & D'Andrade	19. Family used special rewards to motivate her	Malloy
20. Father less dominant	Rosen & D'Andrade	Male and Female	
21. Father encourages autonomy	Rosen & D'Andrade	Mother	
Male		20. In conflict with mother	Horrall
Mother and Father		21. Feels unworthy of mother	Horrall
22. More freedom and adequacy of emotional expression to parents	Walsh	22. Mother rejects and scorns offspring	Horrall
23. Feeling of belongingness in relation to parents	Walsh	23. Father more often absent from home	Passow & Goldberg
24. Parents coercive	Hoffman, Rosen & Lippitt	24. Feel inferior to father	Horrall

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male		**Male and Female**	
Mother and Father		**Mother and Father**	
25. Encourage autonomy	Hoffman, Rosen & Lippitt	25. Parent set no goals or impossible ones	Gowan
Female		26. Authoritarian home environment	Gowan
Mother			
26. Mothers of high-achieving females very authoritarian	Pierce	27. Parents dominant, autocratic or laissez-faire	Gowan
27. Mother more strict with their children	Pierce	28. Parent more neutral or uninterested toward education	Barrett
28. More equalitarian	Pierce	29. Feel hostile because they have not gotten the things in life they'd like from their parents	Shaw & Brown
Father			
29. Feels understood by father	Malloy		
Mother and Father			
30. Disciplined less frequently than friends	Malloy	30. Little exchange of affection between parent and child	Kurtz
31. No special reward for academic achievement	Malloy	31. Parents show little pride in them	Kurtz
32. Family fosters independence	Malloy	32. Do not care about pleasing parents	Kurtz

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male and Female		Male and Female	
Mother		Mother and Father	
33. Mothers are democratic women	Sheldon	33. School achievement of pupils from broken homes inferior to achievement of pupils from normal homes	Curtis & Nemzek
34. Have mothers who were more authoritarian and restrictive in treatment of children	Drews & Teahan		
35. Less conflict about mothers behavior	Morrall		
36. Mothers less nurturant	Crandall, Preston & Rabson		
37. Direct maternal reward for achievement	Crandall, Preston & Rabson		
38. Less dependent for emotional support	Crandall, Preston & Rabson		
39. High achievement associated with over-protective mother	Levey		
Father			
40. Negative relations with father	Morrall		

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male and Female			
Mother and Father			
41. Home environment characterized by permissiveness, intraception and creativity	Gowan		
42. Doubt and confusion in area of family acceptance cause individual to strive harder for academic achievement	Robinowitz		
43. Parents show interest, pride and affection to student	Kurtz		
44. Students want to please parent	Kurtz		
45. Respect parents	Kurtz		
46. Parents of high achievers more punitive with respect to child-rearing	Drews & Teahan		
47. Parents put tension on child in demanding (the imposition of which are clear and possible to obtain)	Gowan		

CHARACTERISTICS OF OVER-ACHIEVERS	INVESTIGATOR	CHARACTERISTICS OF UNDER-ACHIEVERS	INVESTIGATOR
Male and Female			
Mother and Father			
48. Parents took interest and attempted to motivate student	Gowan		
49. Gain acceptance of parents by adhering to their rules	Haggard		
50. Viewed parents as rejecting and generally punitive	Haggard		
51. General negative relationship with parents	Haggard		
52. Saw parents as lacking in emotional warmth	Haggard		
53. Saw parents as overprotective	Haggard		
54. Pressuring for achievement	Haggard		
55. Parents have significantly greater influence on vocational choice	Hopkins, Malleson & Sarnoff		
56. Unsatisfactory interpersonal relationships in family	Dynes, Clarke & Dimigs		

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APPENDIX B

EXPERIMENTAL TESTS

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WORD RATING LIST

Following is a list of words teachers may use to describe students. You are to rate yourself on each word as you think your teachers would rate you.

Be sure to describe yourself as your teachers would, not as you would describe yourself.

Read each word carefully, then decide which of the following ratings would be chosen by your teachers to describe you.

Rating Number	Meaning of Number
1	This word would never describe me.
2	This word sometimes describes me.
3	This word usually describes me.
4	This word always describes me.

After you decide how your teacher might rate you, mark the special answer sheet. Use the pencil provided and make heavy marks. Ignore column "5"

EXAMPLE:

						Answer Sheet				
						1	2	3	4	5
1.	Happy	1	2	3	4	//	▮	//	//	//

This individual has chosen the rating number "2" for the word "happy". This means that he feels that his teachers think that the word "happy" sometimes describes him.

If you have any questions, raise your hand. If not, turn to the next page and begin rating all of the words. Do Not Skip Any Words. Work as rapidly as you can and do not spend too much time on any one word. Remember you are not to use column "5".

Remember you are to rate each of the words as
you think your teachers would in describing you.

PLEASE DO NOT WRITE ON THIS BOOKLET

Teachers feel that I am:

	Never	Sometimes	Usually	Always
1. patient	1	2	3	4
2. talented	1	2	3	4
3. dull	1	2	3	4
4. inefficient	1	2	3	4
5. practical	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
6. clever	1	2	3	4
7. curious	1	2	3	4
8. confident	1	2	3	4
9. average	1	2	3	4
10. logical	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
11. unsuccessful	1	2	3	4
12. smart	1	2	3	4
13. successful	1	2	3	4
14. "blah"	1	2	3	4
15. careful	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
16. thorough	1	2	3	4
17. orderly	1	2	3	4
18. purposeful	1	2	3	4
19. uninterested	1	2	3	4
20. a procrastinator	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
21. unreliable	1	2	3	4
22. studious	1	2	3	4
23. different	1	2	3	4
24. discontented	1	2	3	4
25. energetic	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
26. flighty	1	2	3	4
27. very active	1	2	3	4
28. pessimistic	1	2	3	4
29. responsible	1	2	3	4
30. creative	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
31. a follower	1	2	3	4
32. original	1	2	3	4
33. consistent	1	2	3	4
34. intelligent	1	2	3	4
35. distractable	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
36. in-the-know	1	2	3	4
37. childish	1	2	3	4
38. decisive	1	2	3	4
39. rebellious	1	2	3	4
40. nervous	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
41. systematic	1	2	3	4
42. daring	1	2	3	4
43. cold	1	2	3	4
44. below average	1	2	3	4
45. reckless	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
46. energetic	1	2	3	4
47. "sharp"	1	2	3	4
48. dependable	1	2	3	4
49. shrewd	1	2	3	4
50. a person who postpones	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
51. a goof off	1	2	3	4
52. exacting	1	2	3	4
53. lazy	1	2	3	4
54. stubborn	1	2	3	4
55. perfectionistic	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
56. accepting	1	2	3	4
57. persistent	1	2	3	4
58. submissive	1	2	3	4
59. carefree	1	2	3	4
60. competitive	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
61. impulsive	1	2	3	4
62. unreasonable	1	2	3	4
63. dependent	1	2	3	4
64. a "wheel"	1	2	3	4
65. a "grind"	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
66. fool-hearty	1	2	3	4
67. intellectual	1	2	3	4
68. sociable	1	2	3	4
69. retiring	1	2	3	4
70. driven	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
71. alert	1	2	3	4
72. critical	1	2	3	4
73. brilliant	1	2	3	4
74. casual	1	2	3	4
75. adventurous	1	2	3	4

Teachers feel that I am:

	Never	Sometimes	Usually	Always
76. above average	1	2	3	4
77. productive	1	2	3	4
78. relaxed	1	2	3	4
79. a "brain"	1	2	3	4
80. optimistic	1	2	3	4

	Never	Sometimes	Usually	Always
Teachers feel that I am:				
81. persuadable	1	2	3	4
82. motivated	1	2	3	4
83. a thinker	1	2	3	4
84. conforming	1	2	3	4
85. ambitious	1	2	3	4
Teachers feel that I am:				
86. unusual	1	2	3	4
87. independent	1	2	3	4
88. determined	1	2	3	4
89. contented	1	2	3	4
90. outsider	1	2	3	4
Teachers feel that I am:				
91. aggressive	1	2	3	4
92. a person who delays	1	2	3	4
93. indecisive	1	2	3	4
94. irresponsible	1	2	3	4
95. non-critical	1	2	3	4
Teachers feel that I am:				
96. concerned	1	2	3	4
97. an achiever	1	2	3	4
98. a planner	1	2	3	4
99. a leader	1	2	3	4
100. indifferent	1	2	3	4

	Never	Sometimes	Usually	Always
Teachers feel that I am:				
101. competent	1	2	3	4
102. inconsistent	1	2	3	4
103. teachable	1	2	3	4
104. reasonable	1	2	3	4
105. inquisitive	1	2	3	4
Teachers feel that I am:				
106. impatient	1	2	3	4
107. friendly	1	2	3	4
108. fault-finding	1	2	3	4
109. reserved	1	2	3	4
110. dominant	1	2	3	4
Teachers feel that I am:				
111. inaccurate	1	2	3	4
112. touchy	1	2	3	4
113. passive	1	2	3	4
114. pushed	1	2	3	4
115. efficient	1	2	3	4
Teachers feel that I am:				
116. tense	1	2	3	4
117. easily distracted	1	2	3	4
118. reliable	1	2	3	4
119. serious	1	2	3	4

PERCEIVED PARENTAL ATTITUDES INVENTORY (Form B)

Following are statements about attitudes held by parents toward their children, how they should be brought up, and trained. You will be asked to rate each of these statements as you think your parents would.

> NOTE: If you are living with only one parent, or with someone other than your parents, rate the statements as you think the one parent would, or as you think the person(s) would with whom you are living.

Read each statement carefully, then decide on the rating your parents would give it using the following guide:

Number	Meaning of Number
1.	Strongly Disagree
2.	Disagree
3.	Agree
4.	Strongly Agree

Record your rating with the soft lead pencil on the special answer sheet. Blacken the space under "1" if you feel your parents would strongly disagree with the statement; blacken the space under "2" if you feel they would just disagree; and so on. It is important that you completely blacken the space. Ignore column "5".

EXAMPLE:

My Parents Feel That:	Answer Sheet 1 2 3 4 5
1. Girls are better than boys	// // // ▮ //

This person marked under "4" which means that he feels that his parents would strongly agree with this statement.

Remember you are to rate each statement from your parents point of view

If you have any questions or need materials, raise your hand. Be sure to fill in the spaces at the top of the sheet-name, age, sex, school, grade and date today.

There Are No Right Or Wrong Answers

If there are no questions, turn the page and begin!

PLEASE DO NOT WRITE ON THIS BOOKLET

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Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

1. **It is very important that a child be taught to keep himself neat and clean.**

2. **It is not necessary to notice all of a child's accomplishments.**

3. **Parents should always want their children to be a big success.**

4. **Mothers should always help their children when they get into trouble.**

5. **Mothers should always be "looked up to".**

My Parents Feel That:

6. **Children should be protected from learning about sex.**

7. **A child should be encouraged to try hard jobs for himself.**

8. **The mother rather than the father should be responsible for discipline.**

9. **A child should show pride in his own ability to do well.**

10. **It is not necessary for children to be spanked.**

My Parents Feel That:

11. **If a father punishes a child, the mother should stand up for the child's rights.**

12. **Children should be allowed to go to visit the neighbors at an early age.**

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

13. Mother should be respected more than father.

14. It is all right for a child to be allowed to play alone in the yard at an early age.

15. It is not necessary for a child to eat everything on his plate.

My Parents Feel That:

16. It is healthy for children to sometimes express anger toward their father.

17. It is very important that a child be taught to be honest.

18. It is sometimes hard to stop sons from getting mad at their fathers.

19. Parents need not insist that young children take naps.

20. A child should have his own spending money.

My Parents Feel That:

21. The happiness of the child is the most important thing in a family.

22. Children should be rewarded for their efforts to do good school work.

23. Girls often want to be like their fathers.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Disagree Strongly 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

24. It is unreasonable to expext that a child will stick up for parents when the parents are in the wrong.

25. Children are often cruel to their parents.

My Parents Feel That:

26. Parents should only reward very outstanding achievement.

27. Mothers know what is best for their children.

28. If a child dislikes a certain food, his mother should insist that it be eaten.

29. It is very important that a child be taught to be considerate.

30. Young children should not be sloppy at the table.

My Parents Feel That:

31. Parents should let children alone.

32. In the long run it is better for a child to be kept fairly close to his mother.

33. Parents should like the same things as their children.

34. Children will neglect their school work if parents do not keep after them.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

35. Mothers do not have to insist that their children mind them.

My Parents Feel That:

36. Parents should help their children develop interests of their own.

37. It is better for children to play at home than to visit at other peoples houses.

38. Parents should realize that even good children will fight with others upon occasion.

39. Infants should be fed upon demand.

40. Young children should not be allowed to stay out after dark.

My Parents Feel That:

41. It is unwise for parents to admit their own mistakes to their own children.

42. A wise parent will teach the child just who is boss at an early age.

43. Children should be spanked for temper tantrums.

44. When parents speak, children should obey.

45. For their own sake, children should be pressed to do well in school.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

46. It is not the most important thing to give children all the comforts they want.

47. Spanking children generally does more harm than good.

48. Slapping children immediately when they get into mischief is the best way to end it quickly.

49. Children should be allowed to sometimes make a real mess of things just for the fun of it.

50. If children get into trouble, parents will help them.

My Parents Feel That:

51. It is reasonable to expect that children will raise their children as they have been raised.

52. It is very important that a parent encourage a child to investigate different things.

53. It is normal for children and their mothers to agree on all matters.

54. It is the duty of parents to choose what kind of friends their sons and daughters should have.

55. When children misbehave, it is their parents who are really at fault.

My Parents Feel That:

56. A child should have strict discipline in order to develop a fine, strong character.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

57. It is not unusual for a child to disagree quite often with his father.

58. Babies rarely cry just "to get attention".

59. It is good for children to sometimes "talk-back" to parents.

60. It is a mother's duty to know just about everything that her children are thinking about.

My Parents Feel That:

61. Even when children are very slow in getting dressed, parents should not do it for them.

62. The sooner children are not dependent upon the emotional ties to their parents, the better they will handle their own problems.

63. It is good for a parent to keep telling his children that he really loves them.

64. Most children need some of the natural meanness taken out of them.

65. Children are not always really interested in pleasing their parents.

My Parents Feel That:

66. Children should not interrupt adult conversation.

67. Fathers should be strict when they discipline.

68. It is very important that a child be taught to be made to mind.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

69. Parents understand that their child's school work is hard.

70. It is not unreasonable for a parent to expect a child's friends to think the child is bright.

My Parents Feel That:

71. It is reasonable to expect that boys should want to be like their fathers.

72. A child should be seen and not heard.

73. Fathers should place high demands on their children.

74. A naughty child sometimes needs a good slap in the face.

75. Parents should not require their children to undertake very difficult tasks.

My Parents Feel That:

76. When children can't have their own way, they should try to bargain or reason with their parents.

77. Babies are more fun for parents than older children are.

78. Parents should show interest, pride and affection in their children.

79. Special after-school activities are of great character building value.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

80. Children who are continuously "kept after", rarely amount to much as adults.

My Parents Feel That:

81. Fathers should always help their children when they get into trouble.

82. It is all right for young children to sleep with their mothers.

83. Children should not annoy their parents with unimportant problems.

84. Often it is a mistake to punish a child who has just done something bad.

85. Fathers and mothers should take pride in their children's school success.

My Parents Feel That:

86. It is reasonable to expect that children should want to be like their parents.

87. Boys often want to be like their mothers.

88. It is not unusual for a child to like one parent better than another.

89. Parents should encourage their children to bring their friends home.

90. Parents are always willing to help their children with their homework.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

91. A great deal of discipline is necessary to train children properly.

92. It is better for children to realize that they must their own battles early in life.

93. Parents should not be surprised when their offers of help are rejected by their children.

94. A child should be independent.

95. Firm and strong discipline makes for strong character in later life.

My Parents Feel That:

96. Children should be taught that parents "know best".

97. If it is avoidable, a mother should never be separated from her child.

98. Children do not "act lazy" without some important reason.

99. It is very important that a parent teach his child self-control.

100. Making a child feel wanted and loved is the surest way to obtain good behavior or get him to mind.

My Parents Feel That:

101. All families should be very close.

102. Children should always be loyal to their parents.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

103. Children can respect their parents.

104. Children don't always get along well with their parents.

105. Young people should choose employment which they really like, regardless of their parent's views.

My Parents Feel That:

106. Parents cannot help it if their children are naughty.

107. Too much freedom tends to make children "wild".

108. Mothers should do lots of things with their children.

109. Most children enjoy helping their parents.

110. A child should not generally question the commands of his mother.

My Parents Feel That:

111. A child should be taught to make his own decisions.

112. It is not good for a child to be real close to his parents.

113. Some parents do not have control enough over their children.

114. Telling a child that they won't love him anymore if he is bad is a good way to discipline him.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

115. A mother should stand up for her child.

My Parents Feel That:

116. After a certain age, it is best for parents and their children not to be emotionally involved.

117. Parents should pass judgment on who their children's friends should be.

118. Parents have the best interests of their children at heart.

119. A child's father should always be admired.

120. Children should generally do nothing without the consent of their mothers.

My Parents Feel That:

121. Children should be permitted to keep secrets from their parents.

122. Parents should watch their children closely at all times.

123. Children's judgment can be trusted most of the time.

124. It is normal for children to occasionally disobey their parents.

125. The mother is the most important member of the family.

Be Sure You Have Given A Rating To Each Of The Statements On The Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

126. A child should be made to obey his parents.

127. Almost any child who is not plain lazy can do well in school if they try.

128. A child should always believe what his parents tell him.

129. Father should be respected more than mother.

130. Children should like the same things as their parents.

My Parents Feel That:

131. Parents should make a real effort to understand their children's problems.

132. It is all right for a child to get something to eat late at night.

133. If children wish to please their parents, they should obey them.

134. Children should be allowed to keep the money that they earn.

135. Fathers should do lots of things with their children.

My Parents Feel That:

136. A child's family is the most important part of his life.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

137. It is very important to get an education.

138. The father is the most important member of the family.

139. Children should be encouraged to read good books.

140. Fathers do not have to insist that their children mind them.

My Parents Feel That:

141. It is reasonable to expect that girls should want to be like their mother.

142. Parents should do lots of things with their children.

143. Children should not be allowed to argue with their parents.

144. Children are most lovable when they are small and helpless.

145. Not all children can do well in school.

My Parents Feel That:

146. Children should do as their parents say, not as their parents do.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree

My Parents Feel That:

147. Mothers should be very understanding.

148. Fathers do not take as much interest in their children's school achievements as their mothers do.

149. Children are actually happier under strict training than they are under easier training.

150. The best child is the one who shows lots of affection for his mother.

PRECEDING PAGE BLANK-NOT FILMED

PREFERRED TEACHER CHARACTERISTICS SCALE

DIRECTIONS:

What kind of a teacher do you prefer? In the following items you will find two teacher characteristics paired. From each pair choose the one characteristic you most prefer. If you prefer characteristic "1" then mark in the column for response "1" on the special answer sheet. If you prefer "2" then mark in the "2" column. Be sure to mark only one choice for each pair. Do not omit any items. This is a survey to find out your teacher preferences. There are no right or wrong answers.

If you have any questions or need any test materials, raise your hand and ask the examiner. Be sure to fill in the spaces at the top of the answer sheet. Remember to use only columns "1" and "2", and ignore columns "3", "4", and "5".

If there are no questions turn the page and begin!

PLEASE DO NOT WRITE ON THIS BOOKLET

I prefer a teacher who:

1. 1) is organized
   2) encourages class participation
2. 1) sets high academic standards
   2) is dedicated to his students
3. 1) is dedicated to his subject
   2) makes the classroom pleasant
4. 1) is an expert
   2) treats us as mature people
5. 1) is strict
   2) understands our point of view

I prefer a teacher who:

6. 1) is interested in us
   2) thinks clearly
7. 1) knows the background of his subject
   2) is friendly
8. 1) is considerate
   2) covers all the material
9. 1) sets high academic standards
   2) encourages class participation
10. 1) is dedicated to his subject
    2) is dedicated to his students

I prefer a teacher who:

11. 1) makes the classroom pleasant
    2) is an expert
12. 1) is strict
    2) treats us as mature people
13. 1) understands our point of view
    2) thinks clearly
14. 1) knows the background of his subject
    2) is interested in us
15. 1) is friendly
    2) covers all the material

I prefer a teacher who:

16. 1) is organized
    2) is considerate

17. 1) is dedicated to his subject
    2) encourages class participation

18. 1) is an expert
    2) is dedicated to his students

19. 1) makes the classroom pleasant
    2) is strict

20. 1) thinks clearly
    2) treats us as mature people

I prefer a teacher who:

21. 1) knows the background of his subject
    2) understands our point of view

22. 1) covers all the material
    2) is interested in us

23. 1) is organized
    2) is friendly

24. 1) is considerate
    2) sets high academic standards

25. 1) encourages class participation
    2) is an expert

I prefer a teacher who:

26. 1) is dedicated to his students
    2) is strict

27. 1) thinks clearly
    2) makes the classroom pleasant

28. 1) treats us as mature people
    2) knows the background of his subject

29. 1) understands our point of view
    2) covers all the material

30. 1) is interested in us
    2) is organized

I prefer a teacher who:

31. 1) sets high academic standards
    2) is friendly

32. 1) is dedicated to his subject
    2) is considerate

33. 1) is strict
    2) encourages class participation

34. 1) thinks clearly
    2) is dedicated to his students

35. 1) knows the background of his subject
    2) makes the classroom pleasant

I prefer a teacher who:

36. 1) covers all the material
    2) treats us as mature people

37. 1) understands our point of view
    2) is organized

38. 1) is interested in us
    2) sets high academic standards

39. 1) is dedicated to his subject
    2) is friendly

40. 1) is an expert
    2) is considerate

I prefer a teacher who:

41. 1) thinks clearly
    2) encourages class participation

42. 1) knows the background of his subject
    2) is dedicated to his students

43. 1) covers all the material
    2) makes the classroom pleasant

44. 1) treats us as mature people
    2) is organized

45. 1) sets high academic standards
    2) understands our point of view

I prefer a teacher who:

46. 1) is interested in us
    2) is dedicated to his subject

47. 1) is friendly
    2) is an expert

48. 1) is considerate
    2) is strict

49. 1) knows the background of his subject
    2) encourages class participation

50. 1) covers all the material
    2) is dedicated to his students

I prefer a teacher who:

51. 1) is organized
    2) makes the classroom pleasant

52. 1) sets high academic standards
    2) treats us as mature people

53. 1) understands our point of view
    2) is dedicated to his subject

54. 1) is interested in us
    2) is an expert

55. 1) is strict
    2) is friendly

I prefer a teacher who:

56. 1) thinks clearly
    2) is considerate

57. 1) encourages class participation
    2) covers all the material

58. 1) is dedicated to his students
    2) is organized

59. 1) sets high academic standards
    2) makes the classroom pleasant

60. 1) is dedicated to his subject
    2) treats us as mature people

I prefer a teacher who:

61. 1) is an expert
    2) understands our point of view

62. 1) is interested in us
    2) is strict

63. 1) is friendly
    2) thinks clearly

64. 1) is considerate
    2) knows the background of his subject

HUMAN TRAIT INVENTORY

GENERAL DIRECTIONS: PLEASE READ CAREFULLY!

Following is a list of statements about YOU. Read each statement carefully! Then decide whether this statement is how you always feel, usually feel, sometimes feel or never feel.

Number	Meaning of Number
1	This statement would never describe the way I feel.
2	This statement sometimes describes the way I feel.
3	This statement usually describes the way I feel.
4	This statement always describes the way I feel.

Answer each statement -- Do not leave any blank.

There are no right or wrong answers. The answers apply only to you. The way you answer these statements will not affect your school marks in any way. Mark between the lines under the number that best describes how you feel.

EXAMPLE:

	Answer Sheet
1. I feel it is always a good thing to be honest.	1 2 3 4 5 // ▮ // // //

This individual has chosen number "2" for the statement "I feel it is always a good thing to be honest." This means he feels that this statement sometimes describes him.

In marking your answers on the separate answer sheet, be sure that the number of the statement in the booklet is the same as the number on the answer sheet. It is best to mark your first impression, try not to change your answer. If you change an answer, erase completely your first choice and then blacken between the lines under the other column.

Be sure to fill in all the information at the top of the answer sheet, name, age, sex, date today and so on.

Remember to answer the statements as they apply to you!

PLEASE DO NOT WRITE ON THIS BOOKLET

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

1. I am inclined to take things hard.
2. I like collecting flowers or growing house plants.
3. I worry about my grades.
4.
5. Many times I become so excited I find it hard to go to sleep.
6. I worry about things I have said that may have injured other people's feelings.
7. I take on more work than I should.
8. I take on more than I can handle.
9. I daydream frequently.
10. I prefer to work with the opposite sex on school projects.
11. I work things out for myself rather than have a friend show me how.
12. I work things out for myself rather than have a teacher show me how.
13. I wake up alert and rested most mornings.
14. I wake up tired and listless most mornings.
15. The one to whom I was most attached and whom I most admired as a child was a woman.
16. I have been quite independent and free from family rule.
17.
18. People that break the law are caught and punished.
19. I like to collect things such as stamps, flowers, coins, house plants, etc.
20.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

21. Most people make friends because of what the friends might be able to do for them.

22. I enjoy cooking.

23. I am bothered for days by unimportant thoughts running through my mind.

24. I mind being made fun of.

25. I have played that I am sick to get out of doing something.

26. While in trains, buses, etc., I strike up a conversation with a stranger.

27. When I have an opinion, I stand up for it.

28. Quite a few people are guilty of sexual conduct which is considered to be bad.

29. It is difficult for me to keep interested in most of my school subjects.

30. At least one member of my family is very nervous.

31. I fear bugs such as spiders.

32. When I am in trouble I feel it is best to keep my mouth shut.

33. I like to read about science.

34. I have difficulty sticking up for my rights because I am so reserved.

35. At parties I sit by myself or with just one other person rather than join a crowd.

36. The way of life of those about me controls my conduct.

37. I have difficulty working under strict rules and regulations.

38. I have a great deal of satisfaction when I do something better than what is expected of me.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

39. I am discouraged if not successful at completing something I have seriously started to do.

40. My parents have been strict and stern with me.

41. I find it hard to make friendly contacts with members of the opposite sex.

42. I enjoy reading the editorials in the newspaper.

43. If several friends and I were in trouble, I would rather take the whole blame than give them away.

44. I pass up something I want to do when my friends feel that it isn't worth doing.

45. When someone tries to cut in ahead of me in a line, I become annoyed and speak to them about it.

46.

47. I sweat very easily, even on cold days.

48. I can read a long while without tiring my eyes.

49. I belong to a crowd that tries to stick together through thick and thin.

50. I flirt.

51. I spend time with the opposite sex.

52. Most of my school subjects are a complete waste of time.

53. Most of my school subjects are useful.

54. I find it difficult to find the time to study my assignment for the next day.

55. I care what happens to me.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

56. I have a daydream about life which I have not told anyone.

57. I have done something that is considered dangerous just for the thrill of it.

58. I like to keep people guessing what I'm going to do next.

59. My parents have been satisfied with their economic position.

60. I like just about everything about school.

61. I have trouble getting my school assignments in on time.

62. I feel nervous when called upon in class to recite.

63. I have a hard time getting along with some of my teachers.

64. The questions on school tests often confuse me because I don't know what they are driving at.

65. I do things that are dangerous.

66. I have a hard time concentrating on the subject during class periods.

67. When I was a youngster I stole things.

68. Even when I do sit down to study I find that my mind tends to wander.

69. I have to be in the mood before I can study.

70. I lose sleep at night because thoughts or ideas bother me.

71.

72. I like to make the best grades possible.

73. A college education is unimportant to me.

74.. I like to study.

75. I like to plan very carefully what courses I will take in school.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

76. I like large noisy parties.

77. Unimportant thoughts keep running through my mind and bothering me.

78. I like to read about history.

79. I have played hooky from school.

80. I am said to be quick tempered.

81. There was a time in my life when I like to play with dolls.

82. I learn slowly.

83. The way I do things is misunderstood by others.

84. It would be worthwhile to belong to several clubs or lodges.

85. My parents object to the friends I choose.

86. I feel worthless.

87. I have been sent to the principal for misbehaving in class.

88. I have trouble with my muscles twitching or jumping.

89. I plan my activities in advance.

90. I think I would like the work of a teacher.

91. I lose my temper.

92. I would rather be physically active than sit and read.

93. I want very much to be a success.

94. I watch TV.

95. I give up when I meet difficult problems.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

96. When someone hurts my feelings I want to pay them back, just for the principle of the thing.

97. One or more times a week I suddenly feel hot all over for no apparent reason.

98. I work under a great deal of tension.

99. I have had many strange and unusual experiences.

100. I enjoy social activity.

101. I have trouble waiting for a class to be over.

102. I would be happier if I were able to travel around the country.

103. I would be uneasy if some of my family were in trouble with the police.

104. I worry more about my looks than about my school work.

105. I get disgusted with myself if I don't do as well as I should.

106. Society owes a lot more to the business man and the manufacturer than it does to the artist and the professor.

107. I like fiction stories more than I do factual novels.

108. I would feel satisfied if one of my papers was read to the class in school.

109. I enjoy watching or starting a fire.

110. I like to plan my activities in advance.

111. It is more fun if your activities are not planned out in advance.

112. I wish I were a child again.

113. A person who can't take orders without getting angry or resentful must have something wrong with him.

Be Sure You Have Given A Rating To Each Of The Statements On This Page.

Ratings: 1. Never 2. Sometimes 3. Usually 4. Always

114. When I am disappointed I put it out of my mind.

115. I feel cross and grouchy without good reason.

116. I feel I would make a good leader if given the chance.

117. I like being with people in social gatherings.

118. Some subjects are so unpleasant to me that I can't talk about them.

119. Something about a fire fascinates me.

120. I feel that I haven't any goals or purpose in life.

121. I think teachers are wrong many times and won't admit it.

122. I like to be consistent in the things I do.

123. I like to go to the movies more than once a week.

124. I would like to belong to a motorcycle club.

125. If I were an artist I would like to draw still objects.

THE GENERALIZED SITUATIONAL CHOICE INVENTORY

This is a survey of your choices. There are no right or wrong answers. The results will in no way affect your grades in school.

The inventory is made up of pairs of statements. Read each pair carefully. Choose the one you would most prefer or like to do.

Answer all questions as honestly and frankly as you can. Only in this way will the results be meaningful. Remember this inventory is about you and you alone. This is not a survey of what you can do, but of what you would like to do.

Do Not Write On This Booklet. You will be given an answer sheet and a special pencil to mark your answers with. Mark between the small lines under the letter of your choice.

EXAMPLE:

Answer Sheet

Which would you prefer to do?
1. 1. Go to a party
2. Read a book

1 2 3 4 5
▮ // // // //
Ignore

This person marked under the number "1" on the answer sheet which means that he would prefer to go to a party to reading a book. Ignore columns "3", "4", and "5".

If you have any questions, raise your hand. If not, turn to the next page and answer all the questions. Do Not Skip Any Questions! Work as rapidly as you can and do not spend too much time on any one item.

Remember this is not a survey of what you can do
but of what you would prefer to do.

PLEASE DO NOT WRITE ON THIS BOOKLET

I would prefer to:

1. 1) Find out why a piece of machinery won't work, or
   2) Put together a piece of machinery

2. 1) Avoid failing in school, or
   2) Do well in school

3. 1) Use my free time to watch television, or
   2) Give up my free time to learn something

4. 1) Have no outstanding abilities but be liked by others, or
   2) Be able to do things well, even though others didn't like me for it

5. 1) Successfully complete a group project, or
   2) Successfully complete a project by myself

I would prefer to:

6. 1) Make my own plans, or
   2) Follow someone else's plans

7. 1) Be praised at home, or
   2) Be praised at school

8. 1) Face danger with a group, or
   2) Face danger alone

9. 1) Be quick, but often incorrect, or
   2) Be slow, but often correct

10. 1) Find out how well I did on a school test right away, or
    2) Find out how well I did on a test later, if at all

I would prefer to:

11. 1) Be thought of as being clever in dealing with people, or
    2) Be thought of as being clever in working with ideas

12. 1) Work hard for what I get, or
    2) Just get what I want

13. 1) Create something useful, or
    2) Create a thing of beauty

14. 1) Be graded on how much the teacher thinks I have learned, or
    2) Be graded on how much I think I have learned

15. 1) Work hard to satisfy my own curiosity, or
    2) Work hard to become famous

I would prefer to:

16. 1) Be alone, or
    2) Be with people

17. 1) Make something I have planned myself, or
    2) Make something planned by somebody else

18. 1) Be thought of as being intelligent, or
    2) Be thought of as being practical

19. 1) Play all games or sports about average, or
    2) Be exceptionally outstanding in one sport or game

20. 1) Accomplish a task slowly, but in an orderly manner, or
    2) Accomplish a task in a hurry, but less carefully

I would prefer to:

21. 1) Receive a grade on the basis of how well I did on the teacher's test, or
2) Get a grade on the basis of how hard I tried

22. 1) Be known as someone who doesn't need others, or
2) Be known as someone who depends on others

23. 1) Solve an easy puzzle that I had difficulty with, or
2) Solve a puzzle that other people have difficulty with

24. 1) Work hard to be smart, or
2) Take it easy and become rich

25. 1) Be graded compared to the rest of the class, or
2) Be graded compared to a standard held by the teacher

I would prefer to:

26. 1) Be thought of as being a studious person, or
2) Be thought of as being a carefree person

27. 1) Receive one of several "A's" in class, or
2) Receive the highest test grade and get the only "A"

28. 1) Work with others, or
2) Work alone

29. 1) Have the best teachers in the state in my school, or
2) Have a large recreation center in my school

30. 1) Have a few expensive clothes, or
2) Have lots of less expensive clothes

I would prefer to:

31. 1) Be the holder of one state record, or
    2) Be the holder of several city records

32. 1) Write for a weekly newspaper, or
    2) Write for a paper which has nation-wide distribution

33. 1) Buy a car, or
    2) Continue my education

34. 1) Go to an amusement park, or
    2) Buy a book

35. 1) Finish a very important job, or
    2) Finish several less important jobs

I would prefer to:

36. 1) Be able to do difficult things better than other people, or
    2) Be able to do difficult things just as well as other people

37. 1) Be well prepared for a job after graduation from high school, or
    2) Be well prepared to continue learning

38. 1) Be known as a person who can solve problems better than anyone else, or
    2) Be known as a person who can solve problems well

39. 1) Work on a difficult short puzzle, or
    2) Work on a difficult long puzzle

40. 1) Be on a quiz program, or
    2) Be on a give-a-way program

I would prefer to:

41. 1) Pass a usual classroom examination, or
    2) Pass a college entrance examination

42. 1) Draw a freehand picture which may or may not be good, or
    2) Trace an excellent picture drawn by someone else

43. 1) Wait and receive one large award, or
    2) Receive several small awards

44. 1) Have the teacher give everyone the same grade at the beginning of the term and know I had passed, or
    2) Take chances on getting a higher or lower grade at the end of the course

45. 1) Develop a new product which may or may not be good, or
    2) Make a product as good as the best one available

I would prefer to:

46. 1) Receive a gift I could use right away, or
    2) Receive a gift I had to put together in order to use

47. 1) Be disliked but do well in the activities I undertake, or
    2) Be well liked but be relatively unsuccessful at most jobs

48. 1) Have friends that are a lot of fun, or
    2) Have friends that I learn something from

49. 1) Receive money for my good grades, or
    2) Be allowed to take any course I wanted because of good grades

50. 1) Be successful in finishing a job, or
    2) Finish a job

I would prefer to:

51. 1) Play a game against experts and lose but learn how to play better, or
    2) Play a game against inexperienced players and win

52. 1) Get excellent grades because I have a great deal of ability, or
    2) Get average grades because I have average ability

53. 1) Be graded at the end of a course with the possibility of making an "A", or
    2) Get a "C" at the beginning of a course along with everyone else

54. 1) Be thought of as a person with usual ideas, or
    2) Be thought of as a person with unusual ideas

55. 1) Get one of many "C's" in a course and learn something, or
    2) Get the only "A" and not learn as much

I would prefer to:

56. 1) Make quick decisions and sometimes be right and sometimes wrong, or
    2) Deliberate over decisions and usually be right

57. 1) Be known to my parents as an intelligent person, or
    2) Be known to my parents as a practical person

58. 1) Be a person of leisure, or
    2) Be a person of action

59. 1) Be allowed to take extra courses before or after school, or
    2) Just take courses offered during the school day

60. 1) Complete a job which I recognize as difficult, or
    2) Complete a job which other's recognize as difficult

I would prefer to:

61. 1) Receive money for good grades, or
    2) Have my picture in the paper for good grades

62. 1) Receive grades which are like everyone elses', or
    2) Receive grades that please my parents

63. 1) Do as well as most of my classmates, or
    2) Do better than most of my classmates

64. 1) Catch many fish everytime I go fishing, or
    2) Catch the biggest fish of the day

65. 1) Study hard enough just to get by, or
    2) Study hard enough to do very well

I would prefer to:

66. 1) Be known to my acquaintances as a friend of everyone, or
    2) Be known to my friends as a self-confident person

67. 1) Be considered as being strong but not very smart, or
    2) Be considered as being weak but smart

68. 1) Have someone show me the solution to a problem, or
    2) Take a long time to figure out a problem for myself

69. 1) Be the designer of a new type of airplane, or
    2) Be one of the first persons to ride in a new type of airplane

70. 1) Be known as a person with much ability, or
    2) Be known as a person with adequate ability

I would prefer to:

71. 1) Work at many less important jobs which I know I could finish, or
    2) Work at one very important job which may never be entirely finished in my life-time

72. 1) Work for a commission, or
    2) Work on a straight salary

73. 1) Be paid for how well I did a job, or
    2) Be paid the same amount no matter how I did the job

74. 1) Work rapidly just "skimming" along, or
    2) Work slowly with great thoroughness

75. 1) Start a model plane from scratch, or
    2) Assemble a model plane from a kit

I would prefer to:

76. 1) Make little or no progress on a difficult job and have to get help from others, or
    2) Work slowly and complete a difficult job alone

77. 1) Do a less recognized but complete job, or
    2) Do a recognized but incomplete job

78. 1) Have a better job than my father has, or
    2) Have a job like my father has

79. 1) Begin a task, or
    2) Complete a task

80. 1) Buy a thing of beauty, or
    2) Create something useful

I would prefer to:

81. 1) Have a great deal of money, or
    2) Be an expert in my favorite school subject

82. 1) Be criticized at school, or
    2) Be criticized at home

83. 1) Be paid for how fast I did a job, or
    2) Be paid for how well I did a job

84. 1) Have average ability and be likedby many people, or
    2) Have superior ability but not be liked by as many people

85. 1) Be a minor actor in a large theater production, or
    2) Play the lead in a small theater production

I would prefer to:

86. 1) Have everybody in the class get a "C" at the beginning of the course, or
    2) Be graded at the end of the course with the possibility of getting a higher or lower mark

87. 1) Read one long story, or
    2) Read a book of short stories

88. 1) Receive a grade on the basis of how much my teacher thinks I have learned, or
    2) Take a course from an instructor who only gives "C's"

89. 1) Go down in history as a person who settled a country already discovered, or
    2) Go down in history as the discoverer of a new country

90. 1) Be known as a person with unusually good ideas, or
    2) Be known as a person who goes along with the crowd

I would prefer to:

91. 1) Be known as a person who doesn't let problems worry me, or
    2) Be known as a person who can solve problems well

92. 1) Influence people, or
    2) Help people

93. 1) Be graded on how much effort I put forth, or
    2) Be graded on how much I have learned

94. 1) Be an able person, or
    2) Be wealthy

95. 1) Be thought of as being shrewd, or
    2) Be thought of as being intelligent

I would prefer to:

96. 1) Be paid for the amount of work I did, or
    2) Be paid by the hour

97. 1) Be comfortable and get what I want now, or
    2) Be uncomfortable and get what I want in the future

98. 1) Make decisions, or
    2) Follow directions

99. 1) Work with a group on an ordinary project which other groups in the class are working on, or
    2) Work by myself on a different project

100. 1) Have my classmates know how I did on a test, or
     2) Be the only person who knows how I did on a test

I would prefer to:

101. 1) Work hard in everything I do, or
 2) Work at things as they come along

102. 1) Have a hard job which pays well, or
 2) Have an easier job which pays less

103. 1) Have a hard teacher who makes me work, or
 2) Have an easier teacher who makes class interesting

104. 1) Study my assignments during study hall, or
 2) Wait to study until the mood strikes me

105. 1) Wait to do an unpleasant task in hopes that I might not have to do it, or
 2) Do an unpleasant task and get it over with

I would prefer to:

106. 1) Consider all the possible outcomes when faced with a choice, or
 2) Make a decision and not worry about all the possible outcomes

107. 1) Be known for what I could do, or
 2) Be known for what I do

108. 1) Win an argument with my friends, or
 2) Win a school sponsored debate contest

109. 1) See my name as author of the Book-of-the-Month, or
 2) Score the points that wins the game for my team

110. 1) Think of an idea that nobody has ever thought of, or
 2) Set a world's speed record

I would prefer to:

111. 1) Perform well in class, or
2) Watch television

112. 1) Memorize someone else's poem, or
2) Create a poem of my own

113. 1) Make many friends, or
2) Complete a very difficult job

114. 1) Learn by defeating an inexperienced player, or
2) Learn by defeating an expert

115. 1) Date a lot of different people, or
2) Date one person steady

I would prefer to:

116. 1) Take a job in a new city, or
2) Take a job in my home town

117. 1) Be thought of as being smart, or
2) Be thought of as being practical

118. 1) Save enough money to buy something with cash, or
2) Buy something on credit and pay for it as I use it

119. 1) Do what I think is right, or
2) Do what others think is right

120. 1) Receive a grade on the basis of how well I did on my teacher's test, or
2) Receive a grade on the basis of how I compared with my classmates

I would prefer to:

121. 1) Feel confident about dealing with people, or
2) Feel confident about handling money

122. 1) Be known as a person who is able to do many things, or
2) Be known as an expert

123. 1) Read, or
2) Talk

124. 1) Investigate something, or
2) Join a club

125. 1) Work overtime to make more money, or
2) Get more schooling to make more money

I would prefer to:

126. 1) Take it easy and conserve my energy, or
2) Put forth my best effort all the time

127. 1) Take an unknown short-cut through the woods, or
2) Follow the route through the woods which is known but is longer

128. 1) Do things as other people would do them, or
2) Do things better than other people

129. 1) Inherit a great deal of money, or
2) Earn a great deal of money

130. 1) Watch my favorite television program, or
2) Plan for a vacation to be taken next year

I would prefer to:

131. 1) Wait ten years and receive fame throughout the nation, or
2) Receive fame in my community overnight

132. 1) Wait until I had finished college and make a better salary, or
2) Get a job right after high school and made a good salary

133. 1) Prepare a familiar food, or
2) Prepare a new food

134. 1) Work on a not-so-important project which I may finish, or
2) Work on an important project which I may never finish

135. 1) Play a game for the sake of playing it, or
2) Play a game in order to win

I would prefer to:

136. 1) Plan my life in advance, or
2) Live my life from day to day

137. 1) Have decisions made for me, or
2) Make my own decisions

138. 1) Take a long vacation at the end of the year, or
2) Take a short vacation once a month

139. 1) Accomplish a difficult task well, or
2) Accomplish a difficult task fast

140. 1) Be graded on the basis of the effort I put forth, or
2) Be graded on the basis of how well I got along with my classmates

I would prefer to:

141. 1) Study to go to college, or
2) Study to get out of high school

142. 1) Work on a short-term project, or
2) Work on a long-term project

143. 1) Be known as a good group member, or
2) Be known as a leader

144. 1) Live a life of leisure, or
2) Live a life of many new experiences

145. 1) Enjoy myself at a museum, or
2) Enjoy myself at a night-club

I would prefer to:

146. 1) Find out right away how I did on a test, or
2) Wait to find out how I did on a test

147. 1) Study, or
2) Do things with my friends

148. 1) Make progress on a task, or
2) Complete a task once begun

149. 1) Belong to a club, or
2) Organize a club

150. 1) Make my own decisions, or
2) Help others make their decisions

I would prefer to:

151. 1) Do my homework, or
2) Watch my favorite television program

152. 1) Have a great deal of influence over people, or
2) Have a great deal of ambition

153. 1) Be known as being patient in working with people, or
2) Be known as being patient in working with ideas and objects

154. 1) Develop a new and better way to study, or
2) Make many new and close friends

155. 1) Be thought of as having average intelligence and be wealthy, or
2) Be thought of as being quite intelligent and be poor

I would prefer to:

156. 1) Work hard and become rich, or
2) Take it easy and become smart

157. 1) Play a "tie" game with an expert, or
2) Win a game from an inexperienced player

158. 1) Receive proper credit for accomplishments, or
2) Be thought of by others as being "a lot of fun"

159. 1) Help my friends pass an examination and receive a "C" myself, or
2) Study alone and receive an "A" on the examination

160. 1) Stand up for my rights, or
2) Keep my thoughts to myself

I would prefer to:

161. 1) Carry out the plans of others, or
2) Create something of my own

162. 1) Paint one very large picture, or
2) Paint several small pictures

163. 1) Invent a new musical instrument, or
2) Play a musical instrument already invented

164. 1) Be able to say I had successfully completed a task, or
2) Be able to say I had attempted a difficult task

165. 1) Be known as a person who makes the classroom pleasant, or
2) Be known as a person who knows what he's talking about

I would prefer to:

166. 1) Be criticized at home and praised in school, or
2) Be criticized at school and praised at home

167. 1) Be known as being a "good guy" or a "good gal", or
2) Be known as a person who "does things well"

168. 1) Be a big frog in a little pond, or
2) Be a little frog in a big pond

169. 1) Do something which will cause your name to be in history books, or
2) Become a well-known popular singer

170. 1) Be very happy, or
2) Have lots of money

I would prefer to:

171. 1) Be known as a person who knows his own mind, or
2) Be known as a person who gets help in making decisions

172. 1) Be thought of as being like everyone else, or
2) Be thought of as being different

173. 1) Choose a familiar well liked food, or
2) Try a new food in a restaurant

174. 1) Write a novel or play, or
2) Read a novel or play

175. 1) Do something like everyone else, or
2) Do something outstanding

I would prefer to:

176. 1) Have an instructor who gave me an "A" and not care whether I learned anything or not, or
2) Have an instructor who gave me a "C" but made sure I learned something

177. 1) Read an interesting story, or
2) Take an examination to find out about myself

178. 1) Put together a new object, or
2) Develop new ideas

179. 1) Be demanding on myself to do good work, or
2) Be demanding on my friends so that they will do good work

180. 1) Accept what someone else says even though I don't agree, or
2) Argue for what I believe to be right

I would prefer to:

181. 1) Receive the only "A" in a class, or
2) Receive the same grades as most of the students in my class

182. 1) Receive an "A" on a test in which I missed several questions, or
2) Receive an "A" on a test and only miss one of the questions

183. 1) Study for an exam one night and know that I would receive an "A", or
2) Go to a party on this night and take a chance on a lower grade

184. 1) Be graded on the basis of how much effort I put forth, or
2) Be graded compared to my classmates

185. 1) Choose a friend because I could learn something from him or her, or
2) Choose a friend because I could have fun doing things with him or her

I would prefer to:

186. 1) Be responsible to somebody, or
2) Be given responsibility for doing something

187. 1) Date the smartest girl or boy in class, or
2) Date the girl or boy who is the most fun

188. 1) Do something like everyone else does, or
2) Do something which is different

189. 1) Do something that I have done before, or
2) Do something that I never have done before

190. 1) Work hard enough to be outstanding, or
2) Work hard enough to pass my courses

I would prefer to:

191. 1) Buy a set of encyclopedias for my children, or
     2) Buy a bicycle for my children

192. 1) Discover a gold mine, or
     2) Discover a new medicine

193. 1) Have one of my children win a beauty contest, or
     2) Have one of my children win a college scholarship

194. 1) Get some new clothes, or
     2) Get a years' subscription to the Book-of-the-Month Club

195. 1) Have a few "fine" clothes, or
     2) Have many ordinary clothes

I would prefer to:

196. 1) Be the smartest person in the world, or
     2) Be the happiest person in the world

197. 1) Play a game, or
     2) Be the planner of a game to be played

198. 1) Be a boss, or
     2) Be a worker

199. 1) Be an employer, or
     2) Be an employee

200. 1) Learn by defeating an experienced player, or
     2) Learn by losing to an expert

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PREFERRED JOB CHARACTERISTICS SCALE

DIRECTIONS:

What kind of a job do you prefer? In the following items you will find two job characteristics paired. From each pair choose the one characteristic you value most for your future job, after your education. If you prefer characteristic "1" then mark in the column for response "1" on the special answer sheet. If you prefer "2" then mark in the "2" column. Ignore columns "3", "4", and "5". Be sure to mark only one choice for each pair. Do not omit any items. In some cases it will be hard to make a choice between the items because you may want to choose both items or neither. But, remember, you must make a choice. This is a survey to find out your job preferences. There are no right or wrong answers.

If you have any questions raise your hand and ask the examiner. Be sure to fill in the spaces at the top of the answer sheet.

If there are no questions turn the page and begin!

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I prefer:

1. 1) a job where my opinion is valued
   2) a job with short working hours

2. 1) a job where I could become known for outstanding accomplishments
   2) a job which does not tie me down

3. 1) a job where I could not be fired
   2) a job which has high work standards

4. 1) a job where I solve problems no one else can
   2) a job which permits me to take days off when I want

5. 1) a job which does not require a college education
   2) a job where I could decide how the work is to be done

I prefer:

6. 1) a job which pays well and requires little effort
   2) a job where I could express my ideas, talents, and skills

7. 1) a job which requires little thinking
   2) a job where I could continue to learn the rest of my life

8. 1) a job which absorbs my interests
   2) a job where I make few if any decisions

9. 1) a job where my opinion is valued
   2) a job which does not tie me down

10. 1) a job where I could become known for outstanding accomplishments
    2) a job where I could not be fired

I prefer:

11. 1) a job which has high work standards
    2) a job which permits me to take days off when I want

12. 1) a job where I solve problems no one else can
    2) a job which does not require a college education

13. 1) a job which pays well and requires little effort
    2) a job where I could decide how the work is to be done

14. 1) a job where I could express my ideas, talents, and skills
    2) a job which requires little thinking

15. 1) a job where I could continue to learn the rest of my life
    2) a job where I make few if any decisions

I prefer:

16. 1) a job with short working hours
    2) a job which absorbs my interests

17. 1) a job where my opinion is valued
    2) a job where I could not be fired

18. 1) a job where I could become known for outstanding accomplishments
    2) a job which permits me to take days off when I want

19. 1) a job which does not require a college education
    2) a job which has high work standards

20. 1) a job where I solve problems no one else can
    2) a job which pays well and requires little effort

I prefer:

21. 1) a job which requires little thinking
    2) a job where I could decide how the work is to be done

22. 1) a job where I make few if any decisions
    2) a job where I could express my ideas, talents, and skills

23. 1) a job with short working hours
    2) a job where I could continue to learn the rest of my life

24. 1) a job which does not tie me down
    2) a job which absorbs my interests

25. 1) a job where my opinion is valued
    2) a job which permits me to take days off when I want

I prefer:

26. 1) a job where I could become known for outstanding accomplishments
    2) a job which does not require a college education

27. 1) a job which pays well and requires little effort
    2) a job which has high work standards

28. 1) a job which requires little thinking
    2) a job where I solve problems no one else can

29. 1) a job where I could decide how the work is to be done
    2) a job where I make few if any decisions

30. 1) a job with short working hours
    2) a job where I could express my ideas, talents, and skills

I prefer:

31. 1) a job which does not tie me down
    2) a job where I could continue to learn the rest of my life

32. 1) a job where I could not be fired
    2) a job which absorbs my interests

33. 1) a job which does not require a college education
    2) a job where my opinion is valued

34. 1) a job which pays well and requires little effort
    2) a job where I could become known for outstanding accomplishments

35. 1) a job which requires little thinking
    2) a job which has high work standards

I prefer:

36. 1) a job where I make few if any decisions
    2) a job where I solve problems no one else can

37. 1) a job with short working hours
    2) a job where I could decide how the work is to be done

38. 1) a job where I could express my ideas, talents, and skills
    2) a job which does not tie me down

39. 1) a job where I could not be fired
    2) a job where I could continue to learn the rest of my life

40. 1) a job which permits me to take days off when I want
    2) a job which absorbs my interests

I prefer:

41. 1) a job which pays well and requires little effort
    2) a job where my opinion is valued

42. 1) a job where I could become known for outstanding accomplishments
    2) a job which requires little thinking

43. 1) a job which has high work standards
    2) a job where I make few if any decisions

44. 1) a job with short working hours
    2) a job where I solve problems no one else can

45. 1) a job which does not tie me down
    2) a job where I could decide how the work is to be done.

I prefer:

46. 1) a job where I could not be fired
    2) a job where I could express my ideas, talents, and skills

47. 1) a job where I could continue to learn the rest of my life
    2) a job which permits me to take days off when I want

48. 1) a job which does not require a college education
    2) a job which absorbs my interests

49. 1) a job which requires little thinking
    2) a job where my opinion is valued

50. 1) a job where I make few if any decisions
    2) a job where I could become known for outstanding accomplishments

I prefer:

51. 1) a job with short working hours
    2) a job which has high work standards

52. 1) a job which does not tie me down
    2) a job where I solve problems no one else can

53. 1) a job where I could not be fired
    2) a job where I could decide how the work is to be done

54. 1) a job where I could express my ideas, talents, and skills
    2) a job which permits me to take days off when I want

55. 1) a job which does not require a college education
    2) a job where I could continue to learn the rest of my life

I prefer:

56. 1) a job which pays well and requires little effort
    2) a job which absorbs my interests

57. 1) a job where my opinion is valued
    2) a job where I make few if any decisions

58. 1) a job with short working hours
    2) a job where I could become known for outstanding accomplishments

59. 1) a job which does not tie me down
    2) a job which has high work standards

60. 1) a job where I could not be fired
    2) a job where I solve problems no one else can

I prefer:

61. 1) a job where I could decide how the work is to be done
    2) a job which permits me to take days off when I want

62. 1) a job which does not require a college education
    2) a job where I could express my ideas, talents, and skills

63. 1) a job where I could continue to learn the rest of my life
    2) a job which pays well and requires little effort

64. 1) a job which absorbs my interests
    2) a job which requires little thinking

APPENDIX C

QUESTIONNAIRES

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EDUCATIONAL LEVEL OF PARENTS

DIRECTIONS:

Fill in your name, school and birthdate on the Data Card.

Listed below are eight (8) categories describing eight (8) different educational levels. Read the complete list of categories and select the one category that describes the educational level of your father. Record this category number on the designated space provided on the Data Card. Then select the category number that describes the educational level of mother, and record this number on the designated space provided on the Data Card.

EDUCATIONAL CATEGORIES

Category
Numbers

1. If attended grade school (grades 1 to 8) but did not finish
2. If completed grade school through grade 8
3. If attended high school (grades 9 to 12) but did not finish
4. If graduated from high school
5. If attended college but did not graduate
6. If graduated from college
7. If attended graduate school or professional school but did not attain a graduate or professional degree
8. If graduated from graduate or professional school

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OCCUPATIONAL INFORMATION ABOUT PARENTS

DIRECTIONS:

Listed on the following pages are names of occupations or jobs which are listed in alphabetical order. Each occupation listed has a number after it.

EXAMPLE:

Occupation	**Number**
Truck Driver	**54**

Look carefully through the following list for your father's occupation. Write the name of your father's occupation and the number that follows it in the space provided on the Data Card. Also select your mother's occupation from the same list (if other than housewife) and record the name and the number on the Data Card.

If you have any questions or cannot find your father's or mother's occupation, raise your hand.

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Accountant - 78

Accountant, Certified Public - 81

Accountant, Tax, Gas Company - 80

Accountant for a large business-81

Actuarial Assistant, Life Insurance - 74

Actuary - 78

Advertising Man, Metropolitan Paper - 70

Advertising Manager - 78

Advertising Promoter - 72

Advertising Writer - 70

Aeronautical Engineer - 83

Agent, Internal Revenue - 77

Agent, Purchasing - 68

Agent, Rental - 68

Airline Pilot - 83

Airway Operation Specialist - 74 (control airport traffic)

Analyst, Service - 66

Appraiser, Real Estate - 68 (commercial property)

Arborist for city - 73

Architect - 86

Artist, Advertising - 74

Artist, Technical - 69

Artist who paints pictures to exhibit in galleries - 83

Assembler at aircraft plant - 59

Assistant Editor-small town paper - 74

Assistant Floor Manager - 69

Assistant Manager-Restaurant - 67

Attendant, Tool Crib - 57

Audiologist - 75

Auditor, Bank - 80

Auditor, Insurance Company-state - 79

Author of Novels - 80

Auto Buffer - 56

Auto Mechanic-partnership - 66

Automobile Dealer - 77

Automotive Spare Parts Specialist-62

Auto Salesman - 70

Baker - 62

Baker-owner - 68

Bakery Worker - 48

Bank Auditor - 80

Bank Cashier - 70

Banker - 88

Bank Examiner - 75

Bank Inspector - 74

Bank Teller - 67

Bar (co-owner and operator) - 60

Barber - 59

Barber (owner and employer of one) - 63

Bar Owner - 62

Bartender - 44

Baseball Player-minor league - 67

Beer Dispatcher - 67

Billing Clerk - 59

Biochemist - 85

Biologist - 81

Blueprint Reader - 67

Boards children at home - 59

Boilermaker - 66

Boilermaker's helper - 60

Bookbinder - 60

Bookkeeper - 68

Brakeman-railroad - 63

Branch Manager-large company - 71

Bricklayer - 60

Brickmason - 65

Brick Setter - 60

Broker, Manufacturer's - 70

Broker, Motor Freight Company-71

Broker, Real Estate - 72

Broker, Stock - 79

Buffer, Auto - 56

Builder of homes-supervises work - 69

Building Contractor - 79

Building Inspector - 68

Building Superintendent - 52

Bulldozer Operator - 59

Busboy - Busgirl - 43

Bus Driver-city - 57

Butcher - 59

Buyer for Department Store for single department - 70

Buyer for Furniture Store - 71

Buyer for Hardware Store - 70

Cabinet Maker - 66

Cabinet Member - Federal Government - 92

Calculating Machine Operator - 64

Captain-Army - 80

Captain in city Fire Department - 70

Carpet Layer - 54

Carton Maker - 55

Cashier - 62

Cashier, Bank - 70

Cement Contractor - 74

Cement Finisher - 52

Ceramic Engineer - 80

Certified Public Accountant - 81

Chairman-surveying - 62

Checker-metal assembly line - 64

Chemist - 86

Chemist, Ink (no formal education) - 64

Chief of a Bureau, within a Department of State Government - 81

Chief of Police, city of 350,000 - 80

Chiropodist - 77

Chiropractor - 75

Church Worker-female (office, etc.) - 74

Civil Engineer -84

Claims Adjuster-insurance - 70

Clerk, Actuarial in an insurance office - 65

Clerk, Billing - 59

Clerk, Chief, Railroad Freight Office - 68

Clerk, General Office Worker - 62

Clerk, Payroll - 66

Clerk, Postal - 65

Clerk, Shipping Factory - 59

Clerk, Stock - 51

Clerk, Store - 58

Clerk, Technical - 66

Clothespresser in laundry - 46

Coal Elevator Operator - 51

Coalminer - 49

Commercial Photographer - 72

Common Laborer - 40

Concessionaire - 62

Construction Engineer - 86

Construction Laborer - 50

Contractor, Building - 79

Contractor, Cement - 74

Contractor, General Painting - 74

Coordinator, Management-Labor - 75

Coordinator, Oil Company - 74

Coppersmith-railroad - 62

Corporal in Army - 60

Cosmetologist - 58

County Agricultural Agent - 77

County Judge - 87

Crane Operator - 59

Credit Investigator - 61

Cytologist - 80

Dairyman - 66

Dealer, Automobile - 77

Dealer, Hardware - 66

Department Head-Department
Store - 73

Department Head-Large Company - 78

Department Head-Assistant in
Department Store - 70

Department Leader - Steel
Fabrication - 65

Designer, Dress - 75

Designer, Tool - 75

Diesel Operator - 62

Dietician - 78

Diplomat, U. S. Foreign
Service - 92

Dishwasher - 33

Dispatcher, Chief Highway Motor
Carrier Company - 69

Dispatcher, Train, railroad - 67

Distributor, Beer - 70

Distributor, Oil Business - 69

District Sales Manager-large
company - 72

Dock Worker - 47

Draftsman - 69

Dress Designer - 75

Dressmaker - 62

Driller, Diamond Core - 68

Driver, City Bus - 57

Driver, Greyhound Bus - 63

Druggist, Wholesale - 70

Dry Cleaning plant owner - 75

Economist - 79

Editor - 81

Electrical Engineer - 83

Electrician - 73

Electric Motor Tester - 62

Electrotyper - 66

Embalmer-owner - 72

Engineer, Aeronautical - 83

Engineer, Ceramic - 79

Engineer, Construction - 80

Engineer, Consulting - 86

Engineer, Electrical - 83

Engineer, Heating - 68

Engineer, Industrial - 82

Engineer, Maintenance - 64

Engineer, Mechanical -

Engineer, Mechanical Assistant Research - 78

Engineer, Operating-city - 70

Engineer, Process - 77

Engineer, Radio - 77

Engineer, Railroad - 77

Engineer, Research - 82

Engineer, Sales - 73

Engineer, Sales-gas heating - 68

Engineer, Stationary - 62

Engineer, Surveying - 78

Engineer, Tool - 75

Engineer, Time Study - 75

Engineer, T. V. - 75

Engineering Aids, Senior - 72

Engineman, Railroad - 65

Examiner, Bank - 75

Examiner, Tax - 77

Executive, Junior Advertising Firm - 70

Executive, Large Manufacturing Plant - 81

Executive, Publicity Director for a large Department Store - 78

Executive, Publishing Company - 81

Executive, Telephone Company - 78

Executive, Transportation - 79

Expeditor, Aviation Company - 66

Express Messenger, supervisor on express train - 66

Factory Laborer - 47

Factory Manager - 68

Factory Worker - 50

Factory Worker (semi-skilled) -55

Farmer, Owner and operator - 76

Farmer, Tenant - 68

Farm Hand - 50

Farm Laborer, part time - 40

Feed Mill-part owner and operator - 67

Fieldman, Producers Livestock cooperative - 70

Filling Station Attendant - 52

Fireman, Captain in City - 70

Fireman, City - 65

Fireman, Railroad - 65

Fireman, Stationary - 53

Fisherman-owns own boat - 58

Fitter-female - 61

Flagman, Railroad - 60

Folder and Trimmer

Foreman, Assembly line - 66

Foreman, Dock for Trucking
Company - 66

Foreman, Light Company - 66

Foreman, Main crew, factory - 67

Foreman, Maintenance of school - 52

Foreman, Railroad roundhouse - 66

Foreman, Shipping Department,
Casket Company - 69

Freezer Operator - 59

Funeral Director - 72

Furniture maker, Church - 67

Garage Mechanic - 62

Garbage Collector - 35

Gas Company Accountant - 80

Gas Station Operator-non
owner - 60

Gas Station Owner and
operator - 70

Gas Station Part Owner - 69

General Office Worker, Clerk - 62

Glass Worker - 59

Governess - 69

Greyhound Bus Driver - 63

Grinder, Bearing - 67

Grinder, Casting - 60

Grinding, General - 59

Grocery Store Owner - 70

Guard - 55

Guard, Railroad - 55

Hardware Dealer - 66

Heating Engineer - 68

High School Superintendent - 80

Home Builder-supervises
work - 69

Horticulturist - 77

Hospital Aide, Psychiatric - 61

Housekeeper - 53

Housekeeper, private - 54

Iceman - 50

Industrial, Engineer - 82

Inseminator - 61

Inspector, assembly line - 66

Inspector, Bank - 74

Inspector, Building - 68

Inspector, Factory - 65

Inspector, Machine Shop - 67

Inspector, Railroad Steel Car - 60

Inspector, Refrigerator controls in plant - 62

Inspector, Water supply company (traveling) - 70

Installer, Canopy in jet planes - 63

Installer, Escalator - 62

Instructor, Ceramic (makes and sells) - 78

Insurance Group Leader, Veterans' Administration - 74

Insurance Underwriter - 69

Internal Revenue Agent - 77

Interviewer, Personnel - 71

Investigator, City Tax Division - 71

Investigator, Credit - 61

Iron Worker, Ornamental - 68

Iron Worker, Structural - 63

Janitor - 44

Jeweler - 72

Jeweler, Manufacturing - 73

Jig and Furniture Builder - 68

Job Setter - 69

Justice, U.S. Supreme Court - 96

Knife Maker and Sharpener - 44

Laboratory Aide - 60

Laborer, Common - 40

Laborer, Construction - 50

Laborer, Factory - 47

Labor Management Coordinator - 75

Labor Union-local official - 62

Labor Union-official of an international - 75

Laundress - 45

Leader of dance band - 70

Librarian - 74

Librarian, Museum - 76

Lieutenant, Air Force - 75

Lieutenant, Police-railroad - 69

Life Insurance Actuarial Assistant - 74

Lineman, Telephone Company - 63

Linotype, Operator - 67

Loan Officer - Bank

Loan Service Office Job - 76

Lumberjack - 53

Machine Operator-factory - 60

Machinist Master - 70

Machinist Trained - 73

Machinist's Helper-railroad - 59

Maid - 48

Mail Carrier - 66

Mail Handler at Depot - 62

Maintenance Engineer - 64

Maintenance Man-factory - 55

Maintenance Worker in furnished apartments - 48

Major, Air Force - 81

Manager, Advertising - 78

Manager, Assistant Floor - 69

Manager, Assistant Parts, factory - 65

Manager, Assistant Restaurant - 67

Manager Branch, large company - 71

Manager, Car Sales (new) Large metropolitan Company - 75

Manager, Chain Retail Grocery - 72

Manager, Credit, Van & Storage Company - 70

Manager, Dept. in large company-

Manager, Department, Newspaper - 76

Manager, Dime Store - 69

Manager, Display, single dept. of Department Store - 68

Manager, District, Heat Regulation Company - 70

Manager, District, Sales for large company - 72

Manager, Division, Wholesale Cooperation - 72

Manager, General, Manufacturing plant employing over 100 - 77

Manager, Dry Cleaning Store - 68

Manager, Dry Goods Store - 69

Manager, Garage - 68

Manager, Grill - 67

Manager, Hotel - 78

Manager, Large Company - 72

Manager, Large Department Store-80

Manager, Life Insurance Company-75

Manager, Lumber Yard-small city chain - 72

Manager, Movie Theater - 70

Manager, Office - 70

Manager, Parts, factory - 68

Manager, Plant, large company - 75

Manager, Poolroom - 58

Manager, Production Control - 79

Manager, Promotion - 74

Manager, Public Utility - 81

Manager, Regional Claims-Life Insurance - 70

Manager, Sales - 70

Manager, Sales-salesman who supervises 7 to 12 - 70

Manager, Service Station - 68

Manager, Small Store in city - 69

Manager, Transportation & Moving Company - 70

Manager, T.V. Service (whlse) - 70

Mason - 68

Mayor, large city - 90

Mechanic, Airplane - 67

Mechanic, Auto (partnership) - 66

Mechanical Engineer -

Mechanic, Cash Register - 66

Mechanic, Elevator - 65

Mechanic, Field, Road, Building Machinery - 67

Mechanic, Garage - 62

Mechanic, Gas Meter - 62

Mechanic, Maintenance - 63

Mechanic, Radio - 67

Mechanic, Refrigeration - 67

Medical Technologist - 74

Melter Loader - 61

Member, Board of Directors of Large Company - 86

Messenger for Armored Car Co. - 57

Metallurgist - 80

Metal Plate Worker - 58

Mica Layer in factory - 58

Milk Bottler (unskilled) - 50

Milk Route Man - 54

Milk Truck Owner & Operator (rural) - 59

Millwright - 60

Minister - 87

Minister, (no theological training, High School Education) - 72

Motel Business Owner - 72

Movie Projector Operator - 62

Multigraph Operator - 63

Musician in Symphony Orchestra-81

Newspaper Columnist - 74

Nightwatchman - 47

Nurse, (hospital) - 76

Nurse, Practical - 66

Nurse, Registered - 78

Nurse with B.A. and M.A. degree, teaching Nurses - 80

Nursing or Rest Home Operator - 67

Office Manager - 70

Officer, Trust - 78

Officer, Security - 67

Office Supervisor - 68

Operator, Beauty Shop - 60

Operator, Bulldozer - 59

Operator, Calculating Machine - 64

Operator, Coal Elevator - 51

Operator, Crane - 59

Operator, Diesel - 62

Operator, Equipment, Army Depot-58

Operator, Freezer - 59

Operator, Linotype, Printing
Shop - 67

Operator, Movie Projector - 62

Operator, Multigraph - 63

Operator, Radio, Airport Tower - 67

Operator, Radio Telephone - 64

Operator, Steam Shovel - 59

Operator, Telephone - 59

Optometrist - 83

Owner, Bakery - 68

Owner, Dry Cleaning Plant - 75

Owner-Factory employing 100
people - 82

Owner, Grocery Store - 70

Owner, Large Whole Business - 82

Owner, Machine Shop - 73

Owner, Operator Lunch Stand - 62

Owner, Operator Printing Shop - 74

Owner, Shoe Repair Shop - 65

Owner, Small Mfg. Plant - 78

Owner, Small to medium
Restaurant in city - 68

Owner(co), Insurance Corp. - 78

Owner(co), Motel Business - 72

Owner(co), Small store in city-72

Owner-operator, Automobile Repair
Shop-employs 3 people - 67

Owner-operator, Beauty Shop - 65

Owner-operator, Cigarette Vending
Machine Company - 69

Owner-operator, confectionary - 66

Owner-operator, Cleaning Business
(one store) - 68

Owner-operator, Farm - 76

Owner-operator, Grocery and
Butcher Shop - 72

Owner-operator, Radio & TV Shop-72

Owner-operator, Real Estate
Agency - 73

Packer - 54

Painter - 60

Parts, Factory Manager - 68

Pattern Maker (wood & metal) - 67

Patrolman, State Highway - 68

Payroll Clerk - 66

Personnel Interviewer - 71

Personnel (testing) - 76

Pharmacist - 75

Photographer, Commercial - 72

Physical Therapist - 68

Physician - 93

Physicist-Nuclear - 86

Piano Tuner - 69

Pipefitter - 58

Plant Manager, Large Company - 75

Plant Superintendent - 74

Plasterer - 60

Player in Dance Band - 65

Playground Director - 67

Plumber - 65

Police Lieutenant -

Policeman - 67

Police Officer (Railroad) - 66

Political Party Worker-full time - 75

Poolroom Manager - 58

Porter - 44

Postal Clerk - 65

Practical Nurse - 66

President, Large Retail Chain Store - 84

President, Wholesale Company - 81

Press Feeder-printing shop - 59

Priest - 86

Printer, Newspaper - 68

Printing Pressman - 66

Process Engineer - 77

Production Control Manager - 79

Professor - 89

Promoter, Advertising - 72

Promotion Manager - 79

Proof Reader - 67

Proprietor, Sheet-metal Business - 71

Psychologist - 85

Publicity Man-Large Companies - 71

Publisher - 84

Purchasing Agent - 68

Radio, Airport Tower Operator - 67

Radio, Announcer - 75

Radio, Engineer - 77

Radio Mechanic - 67

Radio Technician - 68

Radio, Telephone Operator - 64

Rag Sorter - 39

Railroad Brakeman - 63

Railroad Conductor - 67

Railroad Engineer - 77

Railroad Section Hand - 48

Railroad Switchman - 60

Real Estate Appraiser for Commercial Property - 68

Real Estate Broker - 72

Recreation Director (Y.M.C.A.) - 70

Registered Nurse - 78

Repairman, Automobile - 63

Repairman Office Machine - 67

Repairman, Salesman-appliance - 66

Repairman, Shoe - 57

Repairman, Shoe (cobbler) - 60

Repairman, Telephone Company - 62

Repairman, T.V. - 67

Repairman, Washing Machine - 65

Repairman, Watch - 67

Rental Agent - 68

Reporter - Daily Paper - 71

Representative, U.S. Congress - 89

Research Engineer - 82

Restaurant Cook - 54

Restaurant Partner - 66

Restaurant Waiter - 48

Roofer - 60

Sales Correspondent-Division local branch of nationwide - 70

Sales Engineer - 73

Sales Manager - 70

Salesman, Auto - 70

Salesman-Retail, not involving canvassing or traveling - 68

Salesman, Route - 60

Salesman Route Driver - 56

Salesman Traveling for a wholesale concern - 68

Salesman-whlse, no traveling - 68

Sales Promotion Worker - 72

Sales Representative - 68

Saw Sharpener - 50

Scientist - 89

Scientist, Government - 88

Seamstress - 57

6

Secretary-Treasurer, Large Co. - 76

Secretary, University Dept. - 65

Security Officer - 67

Sergeant, Army - 66

Servant, Domestic - 47

Service Analyst - 66

Share Cropper - 40

Sheet Metal Worker - 54

Shoe Repair Shop Owner - 65

Shoe Shiner - 33

Showman of animals at Fair - 55

Singer in Night Club - 52

Social Worker - 74

Sociologist - 82

Soda Fountain Clerk - 45

Soil Conservationist - 76

Specifier, Order Department - 66

State Government-Chief of Bureau -

State Government-Head of Department - 87

Statistician, Department of Agriculture - 78

Steam Shovel Operator - 59

Steel Mill Worker - 50

Steel Temperer - 60

Stenographer - 66

Stock Clerk - 51

Stock Broker - 79

Stockhandler - 50

Stockkeeper, Municipal Division of Electricity - 64

Stockman in Linen Supply Co. - 52

Stock Selector - 58

Streetcar Motorman - 58

Street Sweeper - 54

Student, Senior Medical - 79

Student, University - 74

Superintendent, Building - 52

Superintendent, Construction company roads and streets-77

Superintendent, High School - 80

Superintendent, Piping - 69

Superintendent, Plant - 74

Superintendent, Railroad - 75

Superintendent, Steel Mill - 72

Superintendent, Truck Stop - 65

Supervisor, Coal Company - 64

Supervisor, Office - 68

Surveying Chairman - 62

Surveying Engineer - 78

Tailor - 67

Tax Accountant - 80

Taxi Driver - 49

Teacher, Public School - 78

Teacher, Rural School - 75

Technical Artist - 69

Technical Clerk - 66

Technician, Aircraft - 78

Technician, Dental - 73

Technician, Radio - 68

Technologist, Medical - 74

Telephone Operator - 59

Tennant Farmer - 68

Timekeeper - 68

Time Study Engineer - 75

Tool Crib Attendant - 57

Tool Designer - 75

Tool Engineer - 75

Train Dispatcher, Railroad - 67

Tree Surgeon-self employed - 76

Tree Trimmer for Public Utility - 51

Truck Driver - 54

Truck Gardener - 66

T. V. Engineer - 75

T. V. Repairman - 67

T. V. Service Manager (whsle) - 70

Undertaker - 72

Upholsterer - 62

U. S. Employee-Quartermaster Purchasing - 69

Veternarian - 84

Vice President, Large Wholesale Food Company - 80

Vice President, Real Estate Company - 84

Vocational Rehabilitator, Veterans Administration - 78

Waitress - 50

Warehouse Worker - 51

Watchmaker - 74

Watch Repairman - 67

Welder - 59

Welfare Worker for City gov't - 73

Writer in Public Relations Department - 74

X-ray Technician with Degree - 79

Yardmaster, Railroad - 73

These ratings are based on those developed by North-Hatt, Ohio State University, in the "Opinion News," National Opinion Research Center, September 1, 1947, and interpreted by A. O. Haller, Sociology Department, Michigan State University. The occupations were cross-referenced for the purpose of the project.

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APPENDIX D

PILOT STUDY

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THE PILOT STUDY DATA AND SELECTION CRITERION

The purpose of the pilot study was to 1) develop a technique for selecting over- and under-achievers and 2) estimate the sample size needed for the major project.

All of the 1959 tenth grade class of one Michigan high school constituted the population of the pilot study (312 boys and 304 girls). A random sample of 100 boys and 100 girls was drawn for the pilot analysis. All analyses were conducted separately for the sexes because an over-layed scatter plot showed the typical disproportion of girl over-achievers and boy under-achievers when the two sexes were combined. This school had the ninth grade DAT and tenth grade CTMM scores available as well as course grades.

A number of comparisons were made between the two aptitude measures attempting to evaluate their relative effectiveness. The means and standard deviations for the two aptitude measures are presented in Table D.1.

Comparable data from one class level was not available for the California Test of Mental Maturity. The correlation of various sub-scales with grade point average is presented in Table D.2. In all cases the correlations are higher for females than for males.

Table D.1

Summary of Pilot Study Means and Standard Deviations of Aptitude Predictors and Grade Point Criterion (9th Grade)

	Males				Females			
	Sample (100)		Manual* (6900)		Sample (100)		Manual* (6900)	
Measure	M	SD	M	SD	M	SD	M	SD
DAT	15.79	8.33	18.3	8.7	16.40	9.00	18.7	8.6
VR	16.51	7.55	16.3	8.2	15.48	8.48	16.1	7.8
NA	26.52	9.97	24.1	11.3	26.42	10.50	23.1	11.6
CTMM								
L	26.88	7.83			28.04	8.00		
NL	40.34	6.65			38.41	6.28		
GPA	2.02	.65			2.33	.76		

*Taken from A Manual for the Differential Aptitude Tests; Form A, George K. Bennett, Harold G. Seashore, Alexander G. Wesman, The Psychological Corporation, New York, 1952.

The CTMM-L and the DAT-VR correlate consistently higher with grade point average than do the other sub-scales. The intercorrelations of the various scales may be found in Table D.3. The CTMM-L and the DAT-VR were highly correlated for males (.72) and less so for females (.47). In general, the sub-scales of the two aptitude measures were fairly highly intercorrelated, but the range of the coefficients was greater for the males than females.

Table D.2

Correlation of California Test of Mental Maturity (L and NL) and Differential Aptitude Test (VR, NA, and AR) Scores With Grade Point Average (Males and Females)

Test	Scale Correlated With Grade Point Average	Males (N=100)	Females (N=100)
CTMM	Language (L)	.41	.57
	Non-Language (NL)	.26	.45
DAT	Verbal Reasoning (VR)	.46	.63
	Numerical Ability (NA)	.37	.54
	Abstract Reasoning (AR)	.27	.57

Table D.3

Summary of Pilot Study Intercorrelations of the Differential Aptitude Tests (Verbal Reasoning (VR), Numerical Ability (NA), and Abstract Reasoning (AR) California Test of Mental Maturity (Language and Non-Language) Males and Females*

	VR	NA	AR	NL	L
VR		.55	.56	.39	.47
NA	.55		.54	.41	.37
AR	.41	.48		.56	.47
NL	.45	.48	.61		.44
L	.72	.45	.38	.41	

*Correlations below diagonal are for males (N = 100) and above diagonal for females (N = 100).

The Two Stage Regression Technique was originally developed on these data using three feet by three feet scatter grams and a guideline of the Proposed Criterion for Effective Selection of Under- and Over-Achievers. (During the process of using the scatter grams they became so over-layed with different lines that they were not reproduced within this report.) From this analysis it was concluded that a sample of slightly over 4000 would be necessary to obtain the 800 over- and under-achieving males and females for validation and cross-validation. As can be determined from the sample sizes ultimately obtained, this figure was too conservative. The major factor which appeared to influence the sample reduction was the drop-out rate between tenth and eleventh grade which was not taken under consideration adequately when the figures were projected.

Proposed Criterion for Effective Selection of Under- and Over-Achievers

An ideal technique for identifying students who perform higher or lower than expected, might embody the following characteristics.

A. The achievement criterion should:

1. Be academic--not contaminated with activity courses.
2. Equate different grading systems of various schools.

B. The aptitude predictor should:

1. Be heavily loaded with valid and reliable academic predictor factors.

2. Be a stable estimate free as possible of such spurious effects as:
    - a. Chance high scores by low achieving non-readers.
    - b. Chance low scores due to confusion in test administration or poor test motivation.

C. The selection model should:

1. Represent the full range of achievement and ability.
2. Be built separately for the two sexes.
3. Classify the criterion groups with a minimum chance of overlap.[1]
4. Meet the assumptions of a parametric statistic.
5. Control on regression effects.

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[1] Care should be taken to retain sample but run a higher risk of Type I error (eliminate individuals who should have been accepted) than Type II error (accept individuals who should have been rejected).

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APPENDIX E

TEST ADMINISTRATION DIRECTIONS

DIRECTIONS FOR ADMINISTERING BATTERY OF MOTIVATIONAL TESTS FOR MICHIGAN STATE UNIVERSITY

A Participating School Representative

We would appreciate a brief introduction by a staff member of the participating school. The following should be told the students:

1. That each person should do as well as possible.
2. There should be no talking during the testing except to ask questions of the monitors. This is extremely important, because if the items are discussed, the results may not be an accurate account of how the student feels himself.
3. That this program is being conducted in schools across Michigan by Michigan State University under a grant by the United States government.
4. Give the names of the two persons from Michigan State University

Michigan State University Representative

I. Put your own pencils, pens, and books away. Everything you need for this morning's activities will be found in the folder. Now take out all materials in your envelope. If you find a card or answer sheet which has been filled out before, please raise your hand. If you are missing any of the materials I will describe, or if you need help with a question, hold up your hand, and we will come to your desk. Check to see if you have the following:

1. A Pencil -- do not worry if it is dull, it will work better that way.
2. A white card entitled Data Card.
3. A white booklet entitled Educational Level of Parents.
4. A gold booklet entitled Personal Data Questionnaire.
5. Three answer sheets which are labeled in the top right-hand corner in small red letters with the following:
   A. Preferred Teacher Characteristics Scale.
   B. Generalized Situational Choice Inventory.
   C. Word Rating List.
6. Three booklets with the same titles as above:
   A. Preferred Teacher Characteristics Scale.
   B. Generalized Situational Choice Inventory.
   C. Word Rating List.

If you are missing any of these materials, hold up your hand, and someone will come to your desk to replace them.

II. Now, take the three answer sheets and put the following information on all three. Print your last name first, first and middle names. The date; your school; your date of birth; age and sex. On the answer sheet for the Generalized Situational Choice, you will not find a place for school. Will you please indicate your school after the title, Student Number. Put the answer sheet inside of the booklet. Be careful to match the name in the upper right-hand corner with the name on the face of the booklet. Put all three booklets back in your folder.

III. Now take the white data card. Print your name, last name first, then first name and middle. Be sure you print. Print the name of your school. Indicate your birthdate. (No one is born in 1960 in this room.)

Now take the white booklet entitled Educational Level of Parents and read the directions on the front as I read them out loud to you. (Read directions out loud to students.) If you do not know the educational level of your mother or father, try to find out between now and the next time we see you. When you have finished, turn to page two of the Educational Level of Parents Booklet. Read the directions silently to yourself as I read them to you. (Read out loud to students.) If your father is deceased, indicate the occupation he had before he died. If your father is out of work indicate the usual job that he would have. If your father has more than one job, indicate the job that is his main source of income. If you have any questions about the jobs or occupations, hold up your hand and one of the monitors will come to your desk.

IV. Now pull the gold personal data questionnaire out of the folder. I will give you a brief review of questions which tend to cause trouble. For question 7, if you have skipped a half grade, circle the grade and put one-half above it. On pages two, three, four, and five, you will find questions about older brothers, younger brothers, older sisters, and younger sisters. If you have no brothers or sisters, skip to page six. Listen carefully as I give the directions for answering any one

of these pages. Turn to page two. Suppose you have three brothers. If so, you would circle number three. Suppose that their ages were 19, 21, and 24 then on the first line under column 11, you would put 19. On the second line down you would put your second brother's age 21, and on the third line down you would put your third brother's age 24. Notice column 12, line one; here indicate the highest grade your first 19 year old brother has completed. If it were the 11th grade in high school, write 11th grade. In column 13, indicate the types of grades he typically earned. If he got mostly "C's", then put a check mark under "C". In column 14, we'd like you to compare your marks for the same grade. Indicate if you have done as well, or better than, or not as good as he did in school. Do the same with the second brother on the second line. If you have more brothers or sisters than there are spaces, hold up your hand and we will come to the desk and give you help.

Now when you finish with this section, move on to page six, question number 37. Indicate the number of hours of study, including study halls. Turn to page seven. We are interested here in the kinds of activities that you are engaged in that are not a normal part of your school curriculum. There is space down at the bottom for you to write in the out of school activities that you may not find on the list. On page eight, question 40, "If you have a personal problem, with whom would you talk it over?" , We would like to know the one person who you would feel freest to talk to about anything that really bothers you. Question 44, "Present family origins", we are interested

in your origins. Do not indicate where your mother or father or grandfather or grandmother were born. Indicate only where you were born. Question 50 on page ten, we ask for your religious background and we would like to have you indicate the denomination. By this we mean not protestant, but Methodist, Lutheran, whatever it is. Question 51 on page 11, "If you had your choice of living with anyone you wished, which of the following would you choose?" Supposing that you had to choose one of these persons to live with, which one would you choose. Question 51, page 15, you are asked to indicate the subjects which are your favorites and subjects which you dislike the most. Then you are also asked to indicate the subjects which are easiest and hardest for you. We would like to have you respond to subjects anywhere in your high school career or elementary school career. Also, we are only interested in your extreme reactions. We do not care to have you mark subjects that are just normal favorites and dislikes. Do not respond to subjects you have not had yet. (Allow time for students to finish. After several are done, go ahead with the directions below.)

V. Will you pull out of your test booklet the test entitled Preferred Teacher Characteristics Scale. Some of you are not finished with the gold booklet. Listen to these directions and then finish the gold booklet before you begin this test. Would you read the directions silently to yourself as I read them aloud to you. (Read directions.) You'll notice when taking this test, that half of the item is repeated from time to time. The total item is not repeated. This is done for a purpose--to find your preferences.

VI. Allow time for a few to finish and then tell them to continue working until each booklet is finished but to be sure and follow this order.

1. Preferred Teacher Characteristics Scale
2. Generalized Situational Choice Inventory
3. Word Rating List

VII. (When they start the Word Rating List, read this:)

Be sure to respond to each word on the Word Rating List. They are arranged in groups of five for your convenience, but you are to rate all five words--not just one of the five. If you do not know a word, hold up your hand and a monitor will explain to you.

VIII. (When one person is finished)

As you finish take your material to ________________. Put only your pencil in the envelope. The other material will be collected. (Have the students place each of the materials in a separate stack except the answer sheets which should all be put in one stack.)

APPENDIX F

STATISTICAL DATA

Table F.1

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: U = Usually N = Never
A = Always S = Sometimes

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=87)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
1	U or A	68	35	7.995	.01	55	37	3.589	.10
	N or S	19	27			25	32		
2	U or A	53	14	21.502	.01	45	14	20.030	.10
	N or S	34	48			35	55		
3	U or A	02	07	5.157	.05	02	10		
	N or S	85	55			78	59		
4	U or A	07	15	7.500	.01	04	14	8.154	.01
	N or S	80	47			76	55		
5	U or A	65	31	9.647	.01	58	36	6.573	.01
	N or S	22	31			22	33		
6	U or A	37	11	10.185	.01	33	21		
	N or S	50	51			47	48		
7	U or A	62	29	9.133	.01	55	39		
	N or S	25	33			25	30		
8	U or A	57	32	2.910	.10	58	36	6.573	.01
	N or S	30	30			22	33		
9	U or A	39	35	1.957	.20	28	41		
	N or S	48	27			52	28		

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Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Chi Square	P	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	P
10	U or A	65	26	16.360	.01	58	31	11.709	.01
	N or S	22	36			22	38		
11	U or A	03	09	5.989	.05	02	10		
	N or S	84	53			78	59		
12	U or A	56	19	16.468	.01	52	25	12.278	.01
	N or S	31	43			28	44		
13	U or A	64	28	12.363	.01	55	28	11.915	.01
	N or S	23	34			25	41		
14	U or A	12	07	.204					
	N or S	75	55						
15	U or A	28	08	7.344	.01	38	17	8.315	.01
	N or S	59	54			42	52		
16	U or A	59	29	6.629	.01	52	26	11.084	.01
	N or S	28	33			28	43		
17	U or A	63	33	5.816	.05	59	37	6.548	.01
	N or S	24	29			21	32		
18	U or A	61	30	7.189	.01	56	35	5.790	.05
	N or S	26	32			24	34		
19	U or A	07	13	5.201	.05	04	17	11.800	.01
	N or S	80	49			76	52		
20	U or A	11	14	2.560	.20	08	13		
	N or S	76	48			72	56		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Validation Chi Square	Validation P	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Cross-Validation Chi Square	Cross-Validation P
21	U or A	05	09	3.270	.10	05	08		
	N or S	82	53			75	61		
22	U or A	64	21	23.276	.01	61	19	35.358	.01
	N or S	23	41			19	50		
23	U or A	15	22	6.454	.05	18	24	2.761	.10
	N or S	72	40			62	45		
24	U or A	15	13	.329					
	N or S	72	49						
25	U or A	53	36	.123					
	N or S	34	26						
26	U or A	17	16	.824					
	N or S	70	46						
27	U or A	54	28	4.182	.05	49	36		
	N or S	33	34			31	33		
28	U or A	15	14	.658					
	N or S	72	48						
29	U or A	72	37	9.820	.01	62	38	8.443	.01
	N or S	15	25			18	31		
30	U or A	52	29	2.464	.20	45	23		
	N or S	35	33			35	46		
31	U or A	20	18	2.408	.20	16	20		
	N or S	87	44			64	49		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
32	U or A	51	23	6.709	.01	43	26	3.847	.05
	N or S	36	39			37	43		
33	U or A	72	29	21.467	.01	60	31	14.093	.01
	N or S	15	33			20	38		
34	U or A	70	35	10.027	.01	57	32	9.529	.01
	N or S	17	27			23	37		
35	U or A	14	14	1.000					
	N or S	73	48						
36	U or A	51	29	7.181	.01	48	29	4.791	.05
	N or S	36	48			32	40		
37	U or A	07	04	.135					
	N or S	80	58						
38	U or A	47	27	1.589	.20	42	33		
	N or S	40	35			38	36		
39	U or A	10	20	9.706	.01	05	16	8.779	.01
	N or S	77	42			75	53		
40	U or A	07	13	5.201	.05	09	17	4.610	.05
	N or S	80	49			71	52		
41	U or A	50	23	6.014	.05	43	24	5.386	.05
	N or S	37	39			37	45		
42	U or A	28	25	1.046					
	N or S	59	37						

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
43	U or A	06	07	.878					
	N or S	81	55						
44	U or A	05	11	5.434	.05	05	13		
	N or S	82	51			75	56		
45	U or A	03	15	14.669	.01	04	22	18.588	.01
	N or S	84	47			76	47		
46	U or A	55	31	2.592	.20	45	29		
	N or S	32	31			35	40		
47	U or A	51	30	1.528					
	N or S	36	32						
48	U or A	76	39	12.291	.01	68	41	12.343	.01
	N or S	11	23			12	28		
49	U or A	21	19	.781					
	N or S	66	43						
50	U or A	14	17	2.819	.10	11	22	7.066	.01
	N or S	73	45			69	47		
51	U or A	06	12	5.290	.05	01	16		
	N or S	81	50			79	53		
52	U or A	41	19	4.088	.05	41	18	9.807	.01
	N or S	46	43			39	51		
53	U or A	08	14	5.154	.05	03	18	15.267	.01
	N or S	79	48			77	51		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
54	U or A	10	16	5.148	.05	07	18	7.975	.01
	N or S	77	46			73	51		
55	U or A	26	13	1.490					
	N or S	61	49						
56	U or A	55	32	2.007	.20	49	33		
	N or S	32	30			31	36		
57	U or A	48	28	1.452					
	N or S	39	34						
58	U or A	19	12	.136					
	N or S	68	50						
59	U or A	24	29	5.816	.05	17	31	9.511	.01
	N or S	63	33			63	38		
60	U or A	65	25	17.901	.01	53	37		
	N or S	22	37			27	32		
61	U or A	11	10	.363					
	N or S	76	52						
62	U or A	06	11	4.213	.05	02	10		
	N or S	81	51			78	59		
63	U or A	39	32	.668					
	N or S	48	30						
64	U or A	06	10	3.219	.10	10	09		
	N or S	81	52			70	60		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=87)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
65	U or A	10	10	.669					
	N or S	77	52						
66	U or A	08	10	1.639	.20	03	10		
	N or S	79	52			77	59		
67	U or A	45	21	4.676	.05	30	17	2.838	.10
	N or S	42	41			50	52		
68	U or A	64	46	.007					
	N or S	23	16						
69	U or A	14	14	1.206					
	N or S	76	48						
70	U or A	21	16	.054					
	N or S	66	46						
71	U or A	69	37	6.797	.01	61	41	4.859	.05
	N or S	18	25			19	28		
72	U or A	27	21	.133					
	N or S	60	41						
73	U or A	39	17	4.677	.05	27	15		
	N or S	48	45			53	54		
74	U or A	45	37	.925					
	N or S	42	25						
75	U or A	47	36	.240					
	N or S	40	26						

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
76	U or A	61	21	19.217	.01	51	19	19.505	.01
	N or S	26	41			29	50		
77	U or A	60	18	23.143	.01	56	26	15.637	.01
	N or S	27	44			24	43		
78	U or A	54	40	.093					
	N or S	33	22						
79	U or A	14	08	.292					
	N or S	73	54						
80	U or A	35	27	.164					
	N or S	52	35						
81	U or A	24	19	.165					
	N or S	63	43						
82	U or A	35	16	3.345	.10	35	15		
	N or S	52	46			45	54		
83	U or A	64	27	13.718	.01	56	28	13.038	.01
	N or S	23	35			24	41		
84	U or A	31	22	.000					
	N or S	56	40						
85	U or A	70	25	25.239	.01	58	32	19.570	.01
	N or S	17	37			22	37		
86	U or A	17	16	.824					
	N or S	70	46						

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
87	U or A	48	35	.024					
	N or S	39	27						
88	U or A	60	35	2.453	.20	57	34		
	N or S	27	27			23	35		
89	U or A	58	32	3.430	.10	48	30	4.054	.05
	N or S	29	30			32	39		
90	U or A	07	10	2.340	.20	04	14		
	N or S	80	52			76	55		
91	U or A	39	20	2.391	.20	34	17		
	N or S	48	42			46	52		
92	U or A	10	12	1.777	.20	05	18		
	N or S	77	50			75	51		
93	U or A	05	12	6.632	.01	06	07		
	N or S	82	50			74	62		
94	U or A	09	07	.034					
	N or S	78	55						
95	U or A	18	11	.201					
	N or S	69	51						
96	U or A	62	31	6.978	.01	49	40		
	N or S	25	31			31	29		
97	U or A	65	29	12.134	.01	54	19	23.677	.01
	N or S	22	33			26	50		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=87)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
98	U or A	55	23	9.903	.01	50	28	7.136	.01
	N or S	32	39			30	41		
99	U or A	35	18	1.981	.20	26	15		
	N or S	52	44			54	54		
100	U or A	12	14	1.941	.20	04	17		
	N or S	75	48			76	52		
101	U or A	52	18	13.732	.01	41	23	4.853	.05
	N or S	35	44			39	46		
102	U or A	09	18	8.521	.01	05	18	11.168	.01
	N or S	78	44			75	51		
103	U or A	68	41	2.669	.10	68	41	12.343	.01
	N or S	19	21			12	28		
104	U or A	75	49	1.335					
	N or S	12	13						
105	U or A	59	32	3.998	.05	45	30		
	N or S	28	30			35	39		
106	U or A	10	17	6.188	.05	05	18	11.163	.01
	N or S	77	45			75	51		
107	U or A	74	46	2.726	.10	68	53		
	N or S	13	16			12	16		
108	U or A	12	14	1.941	.20	11	15		
	N or S	75	48			69	54		

Table F.1 (Continued)

Word Rating List Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=87)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
109	U or A	23	17	.031					
	N or S	65	45						
110	U or A	17	14	.203					
	N or S	70	48						
111	U or A	04	07	2.372	.20	02	13		
	N or S	83	55			78	56		
112	U or A	06	10	3.219	.10	05	16	8.779	.01
	N or S	81	52			75	53		
113	U or A	11	15	3.352	.10	08	10		
	N or S	76	47			72	59		
114	U or A	12	15	2.639	.10	11	08		
	N or S	75	47			69	61		
115	U or A	61	21	19.217	.01	57	27	15.540	.01
	N or S	26	41			23	42		
116	U or A	12	13	1.335					
	N or S	75	49						
117	U or A	19	28	9.119	.01	17	33	11.736	.01
	N or S	68	34			63	36		
118	U or A	76	37	15.136	.01	64	39	9.569	.01
	N or S	11	25			16	30		
119	U or A	67	32	10.474	.01	63	26	25.978	.01
	N or S	20	30			17	43		

Table F.2

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: U = Usually N = Never
A = Always S = Sometimes

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=95)	Under-Achiever (N=84)	Chi Square	p	Over-Achiever (N=96)	Under-Achiever (N=86)	Chi Square	p
1	U or A	66	54	.543					
	N or S	29	30						
2	U or A	34	12	10.796	.01	39	17	9.264	.01
	N or S	61	72			57	69		
3	U or A	01	07	5.535	.05	00	03		
	N or S	94	77			96	83		
4	U or A	01	11	10.337	.01	01	10		
	N or S	94	73			95	76		
5	U or A	81	52	12.739	.01	76	53	6.760	.01
	N or S	14	32			20	33		
6	U or A	24	14	1.970	.20	28	14		
	N or S	71	70			58	72		
7	U or A	51	43	.111					
	N or S	44	41						
8	U or A	57	36	5.249	.05	48	46		
	N or S	38	48			48	40		
9	U or A	59	65	4.887	.05	49	65	11.673	.01
	N or S	36	19			47	21		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Cross-Validation Chi Square	Cross-Validation p
10	U or A	69	42	9.693	.01	75	46	12.356	.01
	N or S	26	42			21	40		
11	U or A	04	09	2.800	.10	00	05		
	N or S	91	75			96	81		
12	U or A	56	21	20.959	.01	54	25	13.642	.01
	N or S	39	63			42	61		
13	U or A	55	35	4.696	.05	60	31	12.698	.01
	N or S	40	49			36	55		
14	U or A	04	09	2.800	.10	04	03		
	N or S	91	75			92	83		
15	U or A	16	13	.061					
	N or S	79	71						
16	U or A	75	34	27.708	.01	82	41	29.493	.01
	N or S	20	50			14	45		
17	U or A	83	49	20.265	.01	88	63	10.881	.01
	N or S	12	36			08	23		
18	U or A	60	37	6.558	.01	65	45	4.489	.05
	N or S	35	47			31	41		
19	U or A	02	10	6.845	.01	01	06		
	N or S	93	74			95	80		
20	U or A	06	15	5.734	.05	05	68	103.021	.01
	N or S	89	69			91	18		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Chi Square	p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Chi Square	p
21	U or A	04	05	.283					
	N or S	91	79						
22	U or A	66	32	17.718	.01	65	35	13.369	.01
	N or S	29	52			31	51		
23	U or A	16	29	7.141	.01	16	24	3.342	.10
	N or S	79	56			80	62		
24	U or A	06	15	5.734	.05	04	11	4.461	.05
	N or S	89	69			92	75		
25	U or A	61	43	3.104	.10	61	48		
	N or S	34	41			35	38		
26	U or A	03	15	10.650	.01	04	15	8.550	.01
	N or S	92	69			92	71		
27	U or A	48	35	1.407					
	N or S	47	49						
28	U or A	06	22	13.345	.01	13	11		
	N or S	89	62			83	75		
29	U or A	85	56	13.867	.05	84	61	7.690	.01
	N or S	10	28			12	25		
30	U or A	31	31	.360					
	N or S	64	53						
31	U or A	35	30	.025					
	N or S	60	54						

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Chi Square	p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Chi Square	p
32	U or A	40	34	.049					
	N or S	55	50						
33	U or A	65	36	11.849	.01	70	29	28.093	.01
	N or S	30	48			26	57		
34	U or A	62	28	18.181	.01	66	31	19.491	.01
	N or S	33	56			30	55		
35	U or A	08	26	14.709	.01	06	17	9.514	.01
	N or S	87	58			90	59		
36	U or A	44	30	2.066	.20	53	30		
	N or S	51	54			43	56		
37	U or A	01	08	6.700	.01	00	08		
	N or S	94	76			96	78		
38	U or A	32	21	1.613	.20	49	22		
	N or S	63	63			47	64		
39	U or A	04	17	11.059	.01	03	07		
	N or S	91	67			93	79		
40	U or A	14	22	3.640	.10	13	21	3.533	.10
	N or S	81	62			83	65		
41	U or A	54	27	10.978	.01	59	24	20.585	.01
	N or S	41	57			37	62		
42	U or A	19	27	3.443	.10	19	34	8.567	.01
	N or S	76	57			77	52		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Chi Square	p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Chi Square	p
43	U or A	03	10	5.064	.05	01	08		
	N or S	92	74			95	78		
44	U or A	00	16	19.871	.01	01	03		
	N or S	95	68			95	83		
45	U or A	00	09	10.717	.01	00	01		
	N or S	95	75			96	85		
46	U or A	53	32	5.597	.05	56	49		
	N or S	42	52			40	37		
47	U or A	38	27	1.190					
	N or S	57	57						
48	U or A	86	50	5.050	.05	89	61		
	N or S	09	34			07	25		
49	U or A	08	18	6.075	.05	07	11		
	N or S	87	66			89	75		
50	U or A	03	13	8.311	.01	05	14	5.946	.05
	N or S	92	71			91	72		
51	U or A	04	13	6.583	.01	01	07		
	N or S	91	71			95	79		
52	U or A	28	13	4.946	.05	39	14	13.026	.01
	N or S	67	71			57	72		
53	U or A	01	12	11.591	.01	00	05		
	N or S	94	72			96	81		

Table F.2 (Continued)

Word Rating List **Female** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=95)	Under-Achiever (N=84)	Chi Square	p	Over-Achiever (N=96)	Under-Achiever (N=86)	Chi Square	p
54	U or A	06	17	7.717	.01	03	15	10.433	.01
	N or S	89	67			93	71		
55	U or A	27	13	4.305	.05	28	12	6.123	.05
	N or S	68	71			68	74		
56	U or A	63	43	4.223	.05	68	47	5.107	.05
	N or S	32	41			28	39		
57	U or A	44	26	4.419	.05	49	38		
	N or S	51	58			47	48		
58	U or A	13	16	.945					
	N or S	82	68						
59	U or A	24	41	10.688	.01	21	42	14.570	.10
	N or S	71	43			75	44		
60	U or A	47	26	6.332	.05	47	31	3.088	.10
	N or S	48	58			49	55		
61	U or A	13	13	.115					
	N or S	82	71						
62	U or A	01	02	.477					
	N or S	94	82						
63	U or A	50	32	3.795	.05	50	41		
	N or S	45	52			46	45		
64	U or A	01	10	9.103	.01	04	05		
	N or S	94	74			92	81		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=84)	Chi Square	p	Cross-Validation Over-Achiever (N=96)	Under-Achiever (N=86)	Chi Square	p
65	U or A	08	03	1.818	.20	07	04		
	N or S	87	81			89	82		
66	U or A	02	11	7.995	.01	03	10		
	N or S	93	73			93	76		
67	U or A	37	13	12.200	.01	43	17	12.854	.01
	N or S	58	71			53	69		
68	U or A	81	57	7.649	.01	80	66		
	N or S	14	27			16	20		
69	U or A	04	13	6.583	.01	04	07		
	N or S	91	71			92	79		
70	U or A	13	09	.365					
	N or S	82	75						
71	U or A	82	51	15.303	.01	82	57	9.207	.01
	N or S	13	33			14	29		
72	U or A	11	19	3.895	.05	17	15		
	N or S	84	65			79	71		
73	U or A	24	13	2.604	.20	23	13		
	N or S	71	71			73	73		
74	U or A	47	50	1.814	.20	63	52		
	N or S	48	34			33	34		
75	U or A	40	44	1.890	.20	38	51		
	N or S	55	40			58	35		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=85)	Cross-Validation Chi Square	Cross-Validation p
76	U or A	65	13	50.826	.01	61	16	37.529	.01
	N or S	30	71			35	70		
77	U or A	48	22	11.087	.01	52	19	19.614	.01
	N or S	47	62			44	67		
78	U or A	48	52	2.341	.20	54	48		
	N or S	47	32			42	38		
79	U or A	11	04	2.698	.10	12	08		
	N or S	84	80			84	78		
80	U or A	31	19	2.220	.20	41	29		
	N or S	64	65			55	56		
81	U or A	32	19	2.679	.10	37	20	4.928	.05
	N or S	63	65			59	66		
82	U or A	32	16	4.867	.05	26	23		
	N or S	63	68			70	63		
83	U or A	55	29	9.777	.01	65	39	9.261	.01
	N or S	40	55			31	47		
84	U or A	28	20	.729					
	N or S	67	64						
85	U or A	71	33	23.016	.01	70	47	6.592	.01
	N or S	24	51			26	39		
86	U or A	15	21	2.354	.20	12	23		
	N or S	80	63			84	63		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=84)	Chi Square	P	Over-Achiever (N=96)	Under-Achiever (N=86)	Chi Square	P
87	U or A	54	38	2.403	.20	60	41		
	N or S	41	46			36	45		
88	U or A	65	41	7.100	.01	68	52		
	N or S	30	43			28	34		
89	U or A	59	36	6.632	.01	63	46	2.782	.10
	N or S	36	48			33	40		
90	U or A	04	05	.283					
	N or S	91	79						
91	U or A	17	08	2.600	.10	18	15		
	N or S	78	76			78	71		
92	U or A	01	12	11.591	.01	02	10		
	N or S	94	72			94	76		
93	U or A	03	10	5.064	.05	04	08		
	N or S	92	74			92	78		
94	U or A	00	08	9.471	.01	03	02		
	N or S	95	76			93	84		
95	U or A	13	20	3.040	.10	21	20		
	N or S	82	64			75	66		
96	U or A	73	49	7.037	.01	76	54	5.961	.05
	N or S	22	35			20	32		
97	U or A	58	25	17.552	.01	64	25	25.661	.01
	N or S	37	59			32	61		

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Chi Square	p	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Chi Square	p
98	U or A	50	25	9.578	.01	49	33	2.941	.10
	N or S	45	59			47	53		
99	U or A	17	14	.047					
	N or S	78	70						
100	U or A	03	11	6.106	.05	10	15		
	N or S	92	73			86	71		
101	U or A	52	26	10.257	.01	58	22	22.345	.01
	N or S	43	58			38	64		
102	U or A	08	18	6.075	.05	07	10		
	N or S	87	66			89	76		
103	U or A	72	51	4.713	.05	86	53	19.647	.10
	N or S	23	33			10	33		
104	U or A	82	57	8.754	.01	89	66	9.150	.01
	N or S	13	27			07	20		
105	U or A	49	34	2.210	.20	55	50		
	N or S	46	50			41	36		
106	U or A	07	18	7.335	.01	03	14	9.269	.01
	N or S	88	66			93	72		
107	U or A	88	66	7.335	.01	91	75	3.252	.10
	N or S	07	18			05	11		
108	U or A	08	07	.002					
	N or S	87	78						

Table F.2 (Continued)

Word Rating List Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=84)	Chi Square	P	Cross-Validation Over-Achiever (N=96)	Cross-Validation Under-Achiever (N=86)	Chi Square	P
109	U or A	29	20	1.012					
	N or S	66	64						
110	U or A	05	09	1.837	.20	06	08		
	N or S	90	75			90	78		
111	U or A	02	08	4.652	.05	03	09		
	N or S	93	76			93	77		
112	U or A	02	09	5.729	.05	01	08		
	N or S	93	75			95	78		
113	U or A	05	15	7.124	.05	10	07		
	N or S	90	69			86	79		
114	U or A	03	10	5.064	.05	04	06		
	N or S	92	74			92	80		
115	U or A	68	33	18.909	.01	76	44	15.838	.01
	N or S	27	51			20	42		
116	U or A	16	11	.489					
	N or S	79	73						
117	U or A	14	32	12.739	.01	13	27	8.432	.01
	N or S	81	52			83	59		
118	U or A	86	52	20.681	.01	90	62	15.455	.01
	N or S	09	32			06	24		
119	U or A	65	44	5.211	.05	68	50	3.206	.10
	N or S	30	41			28	36		

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Table F.3

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = Agree D = Disagree
SA = Strongly Agree SD = Strongly Disagree

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=65)	Chi Square	p	Cross-Validation Over-Achiever (N=77)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
1	A or SA	81	62	3.817	.05	75	67	.226	
	D or SD	00	03			02	01		
2	A or SA	24	26	1.722	.20	23	26	1.129	
	D or SD	57	39			54	42		
3	A or SA	71	54	.614					
	D or SD	10	11						
4	A or SA	48	40	.078					
	D or SD	33	25						
5	A or SA	72	55	.582					
	D or SD	09	10						
6	A or SA	18	13	.106					
	D or SD	63	52						
7	A or SA	72	59	.138					
	D or SD	09	06						
8	A or SA	13	17	2.255	.20	13	09	.373	
	D or SD	68	48			64	59		
9	A or SA	77	62	.008					
	D or SD	04	03						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
10	A or SA	22	19	.076					
	D or SD	59	46						
11	A or SA	05	11	4.271	.05	06	09	1.154	
	D or SD	76	54			71	59		
12	A or SA	56	43	.147					
	D or SD	25	22						
13	A or SA	16	17	.845					
	D or SD	65	48						
14	A or SA	31	34	2.876	.10	34	33	.278	
	D or SD	50	31			43	35		
15	A or SA	25	32	5.111	.05	28	30	.905	
	D or SD	56	33			49	38		
16	A or SA	27	23	.067					
	D or SD	54	42						
17	A or SA	80	61	2.639	.20	75	67	.226	
	D or SD	01	04			02	01		
18	A or SA	68	53	.148					
	D or SD	13	12						
19	A or SA	27	34	.337	.05	20	31	6.093	.05
	D or SD	54	31			57	37		
20	A or SA	67	54	.003					
	D or SD	14	11						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
21	A or SA	52	39	.271					
	D or SD	29	26						
22	A or SA	52	46	.706					
	D or SD	29	19						
23	A or SA	29	20	.410					
	D or SD	52	45						
24	A or SA	40	39	1.637	.20	44	42	.320	
	D or SD	41	26			33	26		
25	A or SA	39	40	2.604	.20	42	40	.269	
	D or SD	42	25			35	28		
26	A or SA	30	28	.549					
	D or SD	51	37						
27	A or SA	49	44	.808					
	D or SD	32	21						
28	A or SA	23	16	.263					
	D or SD	58	49						
29	A or SA	80	62	1.547					
	D or SD	01	03						
30	A or SA	70	52	1.082					
	D or SD	11	13						
31	A or SA	08	10	1.012					
	D or SD	73	55						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
32	A or SA	28	31	2.580	.20	35	33	.137	
	D or SD	53	34			42	35		
33	A or SA	25	29	2.926	.10	27	31	1.666	.20
	D or SD	56	36			50	37		
34	A or SA	50	47	1.810	.20	51	55	3.941	.05
	D or SD	31	18			26	13		
35	A or SA	15	14	.207					
	D or SD	66	51						
36	A or SA	69	56	.027					
	D or SD	12	09						
37	A or SA	37	21	2.693	.10	26	33	3.261	.10
	D or SD	44	44			51	35		
38	A or SA	74	57	.526					
	D or SD	07	08						
39	A or SA	33	31	.708					
	D or SD	48	34						
40	A or SA	71	52	1.592	.20	65	56	.111	
	D or SD	10	13			12	12		
41	A or SA	32	25	.017					
	D or SD	49	40						
42	A or SA	63	53	.312					
	D or SD	18	12						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=65)	Chi Square	p	Cross-Validation Over-Achiever (N=77)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
43	A or SA	51	42	.043					
	D or SD	30	23						
44	A or SA	78	57	3.832	.05	73	61	1.339	
	D or SD	03	08			04	07		
45	A or SA	64	46	1.319					
	D or SD	17	19						
46	A or SA	69	47	3.663	.10	62	56	.080	
	D or SD	12	18			15	12		
47	A or SA	22	23	1.144					
	D or SD	59	42						
48	A or SA	39	38	1.539					
	D or SD	42	27						
49	A or SA	16	16	.498					
	D or SD	65	49						
50	A or SA	65	43	3.720	.10	62	54	.028	
	D or SD	16	22			15	14		
51	A or SA	55	42	.175					
	D or SD	26	23						
52	A or SA	69	55	.009					
	D or SD	12	10						
53	A or SA	15	23	5.328	.05	17	20	1.022	
	D or SD	66	42			60	48		

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Cross-Validation Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
54	A or SA	32	27	.062					
	D or SD	49	38						
55	A or SA	24	24	.869					
	D or SD	57	41						
56	A or SA	36	27	.124					
	D or SD	45	38						
57	A or SA	51	47	1.427					
	D or SD	30	18						
58	A or SA	28	29	1.530					
	D or SD	53	36						
59	A or SA	12	19	4.481	.05	13	13	.122	
	D or SD	69	46			64	55		
60	A or SA	25	35	7.868	.01	31	34	1.385	
	D or SD	56	30			46	34		
61	A or SA	64	47	.889					
	D or SD	17	18						
62	A or SA	71	47	5.479	.05	55	58	4.037	.05
	D or SD	10	18			22	10		
63	A or SA	54	44	.017					
	D or SD	27	21						
64	A or SA	43	39	.700					
	D or SD	38	26						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
65	A or SA	62	49	.027					
	D or SD	19	16						
66	A or SA	66	50	.459					
	D or SD	15	15						
67	A or SA	61	50	.052					
	D or SD	20	15						
68	A or SA	80	62						
	D or SD	01	03						
69	A or SA	60	39	3.272	.10	54	42	1.129	
	D or SD	21	26			23	26		
70	A or SA	54	43	.004					
	D or SD	27	22						
71	A or SA	64	42	3.738	.10	56	59	4.336	.05
	D or SD	17	23			21	09		
72	A or SA	30	29	.860					
	D or SD	51	36						
73	A or SA	27	28	1.458					
	D or SD	54	37						
74	A or SA	37	36	1.359					
	D or SD	44	29						
75	A or SA	33	35	2.489	.20	30	30	.396	
	D or SD	48	30			47	38		

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=65)	Chi Square	P	Cross-Validation Over-Achiever (N=77)	Cross-Validation Under-Achiever (N=68)	Chi Square	P
76	A or SA	23	31	5.762	.05	30	29	.203	
	D or SD	58	34			47	39		
77	A or SA	42	30	.468					
	D or SD	39	35						
78	A or SA	78	58	2.822	.10	73	62	.741	
	D or SD	03	07			04	06		
79	A or SA	70	55	.095					
	D or SD	11	10						
80	A or SA	41	33	.000					
	D or SD	40	32						
81	A or SA	44	38	.251					
	D or SD	37	27						
82	A or SA	37	23	1.579	.20	34	31	.030	
	D or SD	44	42			43	37		
83	A or SA	20	25	3.207	.10	22	28	2.540	.20
	D or SD	61	40			55	40		
84	A or SA	30	23	.043					
	D or SD	51	42						
85	A or SA	74	59	.015					
	D or SD	07	06						
86	A or SA	63	49	.116					
	D or SD	18	16						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
87	A or SA	13	12	.148					
	D or SD	68	53						
88	A or SA	59	47	.005					
	D or SD	22	18						
89	A or SA	68	54	.020					
	D or SD	13	11						
90	A or SA	40	38	1.195					
	D or SD	41	27						
91	A or SA	32	34	2.386	.10	35	34	.229	
	D or SD	49	31			42	34		
92	A or SA	58	50	.530					
	D or SD	23	15						
93	A or SA	60	47	.057					
	D or SD	21	18						
94	A or SA	53	28	7.296	.01	32	35	1.427	
	D or SD	28	37			45	33		
95	A or SA	45	43	1.692	.20	45	43	.348	
	D or SD	36	22			32	25		
96	A or SA	59	50	.318					
	D or SD	22	15						
97	A or SA	41	38	.894					
	D or SD	40	27						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	P	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	P
98	A or SA	33	37	3.784	.10	42	39	.115	
	D or SD	48	28			35	29		
99	A or SA	77	59	1.041					
	D or SD	04	06						
100	A or SA	69	47	3.663	.10	64	55	.123	
	D or SD	12	18			13	13		
101	A or SA	78	55	6.066	.05	72	60	1.229	
	D or SD	03	10			05	08		
102	A or SA	78	55	6.066	.05	65	63	2.364	.20
	D or SD	03	10			12	05		
103	A or SA	81	60	6.452	.05	77	66	2.296	.20
	D or SD	00	05			00	02		
104	A or SA	70	50	2.222	.20	66	59	.034	
	D or SD	11	15			11	09		
105	A or SA	57	49	.456					
	D or SD	24	16						
106	A or SA	08	14	3.832	.05	10	17	3.439	.10
	D or SD	73	51			67	51		
107	A or SA	68	50	1.149					
	D or SD	13	15						
108	A or SA	58	49	.263					
	D or SD	23	16						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	p	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	p
109	A or SA	65	48	.844					
	D or SD	16	17						
110	A or SA	71	49	3.709	.10	63	55	.021	
	D or SD	10	16			14	13		
111	A or SA	73	57	9.969	.01	70	62	.003	
	D or SD	08	24			07	06		
112	A or SA	20	21	1.036					
	D or SD	61	44						
113	A or SA	75	55	2.352	.20	70	61	.060	
	D or SD	06	10			07	07		
114	A or SA	12	14	1.114					
	D or SD	69	51						
115	A or SA	64	44	2.400	.20	62	48	1.945	.20
	D or SD	17	21			15	20		
116	A or SA	36	41	5.023	.05	30	39	4.897	.05
	D or SD	45	24			47	29		
117	A or SA	34	31	.477					
	D or SD	47	34						
118	A or SA	79	56	6.700	.01	69	59	.282	
	D or SD	02	09			08	09		
119	A or SA	64	48	.539					
	D or SD	17	17						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=65)	Chi Square	p	Cross-Validation Over-Achiever (N=77)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
120	A or SA	30	33	2.772	.10	28	33	2.193	.20
	D or SD	51	32			49	35		
121	A or SA	51	37	.549					
	D or SD	30	28						
122	A or SA	32	40	7.003	.01	35	30	.026	
	D or SD	49	25			42	38		
123	A or SA	53	37	1.325					
	D or SD	27	28						
124	A or SA	72	51	2.954	.10	28	57	33.531	.01
	D or SD	09	14			49	11		
125	A or SA	24	21	.121					
	D or SD	57	44						
126	A or SA	76	58	1.010					
	D or SD	05	07						
127	A or SA	76	53	5.293	.05	62	57	.268	
	D or SD	05	12			15	11		
128	A or SA	66	42	5.328	.05	55	42	1.523	
	D or SD	15	23			22	26		
129	A or SA	16	21	3.004	.10	19	20	.412	
	D or SD	65	44			58	48		
130	A or SA	18	17	.304					
	D or SD	63	48						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=81)	Under-Achiever (N=65)	Chi Square	P	Over-Achiever (N=77)	Under-Achiever (N=68)	Chi Square	P
131	A or SA	78	56	4.918	.05	71	60	.653	
	D or SD	03	09			06	08		
132	A or SA	56	43	.147					
	D or SD	25	22						
133	A or SA	76	56	2.449	.20	71	57	2.453	.20
	D or SD	05	09			06	11		
134	A or SA	74	61	.320					
	D or SD	07	04						
135	A or SA	69	54	.121					
	D or SD	12	11						
136	A or SA	73	58	.031					
	D or SD	08	07						
137	A or SA	78	57	3.832	.05	74	59	4.149	.05
	D or SD	03	08			03	09		
138	A or SA	28	27	.746					
	D or SD	53	38						
139	A or SA	73	57	.218					
	D or SD	08	08						
140	A or SA	15	24	6.240	.05	10	17	3.439	.10
	D or SD	66	41			67	51		
141	A or SA	63	51	.010					
	D or SD	18	14						

Table F.3 (Continued)

Perceived Parental Attitudes Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=65)	Validation Chi Square	Validation P	Cross-Validation Over-Achiever (N=77)	Cross-Validation Under-Achiever (N=68)	Cross-Validation Chi Square	Cross-Validation P
142	A or SA	68	45	4.466	.05	68	52	3.549	.10
	D or SD	13	20			09	16		
143	A or SA	45	35	.043					
	D or SD	36	30						
144	A or SA	49	43	.496					
	D or SD	32	22						
145	A or SA	61	55	1.913	.20	64	52	.997	
	D or SD	20	10			13	16		
146	A or SA	61	52	.454					
	D or SD	20	13						
147	A or SA	76	57	1.673	.20	71	58	1.758	.20
	D or SD	05	08			06	10		
148	A or SA	28	26	.457					
	D or SD	53	39						
149	A or SA	38	32	.078					
	D or SD	43	33						
150	A or SA	25	28	2.326	.20	17	26	4.519	.05
	D or SD	56	37			60	42		

Table F.4

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = Agree D = Disagree
SA = Strongly Agree SD = Strongly Disagree

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Chi Square	p	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
1	A or SA	88	84	.002					
	D or SD	02	02						
2	A or SA	22	25	.481					
	D or SD	68	61						
3	A or SA	68	63	.122					
	D or SD	22	23						
4	A or SA	50	58	2.621	.20	49	48	.011	
	D or SD	40	28			39	37		
5	A or SA	78	78	.709					
	D or SD	12	08						
6	A or SA	09	15	2.068	.20	06	16	5.614	.05
	D or SD	81	71			82	69		
7	A or SA	81	75	.340					
	D or SD	09	11						
8	A or SA	12	16	.913					
	D or SD	78	70						
9	A or SA	81	81	1.052					
	D or SD	09	05						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Chi Square	p	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
10	A or SA	25	18	1.117					
	D or SD	65	68						
11	A or SA	03	11	5.372	.05	04	09	2.272	.20
	D or SD	87	75			84	76		
12	A or SA	70	58	2.369	.20	66	51	4.444	.05
	D or SD	20	28			22	34		
13	A or SA	06	13	3.260	.10	07	07	.005	
	D or SD	84	73			81	78		
14	A or SA	36	37	.166					
	D or SD	54	49						
15	A or SA	41	32	1.262					
	D or SD	49	54						
16	A or SA	28	34	1.368					
	D or SD	62	52						
17	A or SA	89	86	.961					
	D or SD	01	00						
18	A or SA	67	70	1.232					
	D or SD	23	16						
19	A or SA	17	18	.115					
	D or SD	73	68						
20	A or SA	76	71	.114					
	D or SD	14	15						

Table F.4 (Continued)

Perceived Parental Attitude Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Chi Square	P	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Chi Square	P
21	A or SA	59	51	.734					
	D or SD	31	35						
22	A or SA	66	57	1.040					
	D or SD	24	29						
23	A or SA	25	27	.276					
	D or SD	65	59						
24	A or SA	50	50	.120					
	D or SD	40	36						
25	A or SA	56	59	.791					
	D or SD	34	27						
26	A or SA	20	36	7.818	.01	24	22	.043	
	D or SD	70	50			64	63		
27	A or SA	63	62	.094					
	D or SD	27	24						
28	A or SA	29	31	.286					
	D or SD	61	55						
29	A or SA	88	83	.255					
	D or SD	02	03						
30	A or SA	73	65	.794					
	D or SD	17	21						
31	A or SA	12	16	.913					
	D or SD	78	70						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over- Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	p	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	p
32	A or SA	31	44	5.026	.05	33	32	.000	
	D or SD	59	42			55	53		
33	A or SA	32	33	.150					
	D or SD	58	53						
34	A or SA	37	52	6.590	.01	36	53	7.959	.01
	D or SD	53	34			52	32		
35	A or SA	18	14	.409					
	D or SD	72	72						
36	A or SA	82	81	.608					
	D or SD	08	05						
37	A or SA	26	35	2.708	.10	29	33	.648	
	D or SD	64	51			59	52		
38	A or SA	80	79	.445					
	D or SD	10	07						
39	A or SA	33	36	.498					
	D or SD	57	50						
40	A or SA	73	78	3.316	.10	75	75	.339	
	D or SD	17	08			13	10		
41	A or SA	16	26	3.755	.05	15	22	2.008	.20
	D or SD	74	60			73	63		
42	A or SA	79	80	1.387					
	D or SD	11	06						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory _Female_ Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	p	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	p
43	A or SA	55	62	2.380	.20	64	66	.560	
	D or SD	35	24			24	19		
44	A or SA	82	78	.009					
	D or SD	08	08						
45	A or SA	62	67	1.827	.20	68	67	.061	
	D or SD	28	19			20	18		
46	A or SA	81	66	5.615	.05	78	68	2.448	.20
	D or SD	09	20			10	17		
47	A or SA	41	25	5.100	.05	18	29	4.079	.05
	D or SD	49	61			70	56		
48	A or SA	54	51	.009					
	D or SD	36	35						
49	A or SA	46	22	12.090	.01	25	22	.140	
	D or SD	44	64			63	63		
50	A or SA	71	71	.380					
	D or SD	19	15						
51	A or SA	54	56	.491					
	D or SD	36	30						
52	A or SA	81	73	1.052					
	D or SD	09	13						
53	A or SA	20	19	.000					
	D or SD	70	67						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	p	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	p
54	A or SA	25	28	.478					
	D or SD	65	58						
55	A or SA	21	13	1.905	.20	24	14	2.943	.10
	D or SD	69	73			64	71		
56	A or SA	37	33	.138					
	D or SD	53	53						
57	A or SA	51	59	2.674	.10	43	61	9.458	.01
	D or SD	39	27			45	24		
58	A or SA	30	29	.003					
	D or SD	60	57						
59	A or SA	10	13	.621					
	D or SD	80	73						
60	A or SA	25	26	.129					
	D or SD	65	60						
61	A or SA	63	65	.691					
	D or SD	27	21						
62	A or SA	67	59	.737					
	D or SD	23	27						
63	A or SA	60	57	.003					
	D or SD	30	29						
64	A or SA	53	57	1.025					
	D or SD	37	29						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	P	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	P
65	A or SA	60	62	.609					
	D or SD	30	24						
66	A or SA	71	76	2.874	.10	79	74	.311	
	D or SD	19	10			09	11		
67	A or SA	61	53	.729					
	D or SD	29	33						
68	A or SA	85	78	.902					
	D or SD	05	08						
69	A or SA	72	52	8.062	.01	67	58	1.346	
	D or SD	18	34			21	27		
70	A or SA	42	48	1.473					
	D or SD	48	38						
71	A or SA	66	75	5.315	.05	71	67	.093	
	D or SD	24	11			17	18		
72	A or SA	24	35	3.885	.05	21	29	2.212	.20
	D or SD	66	51			67	56		
73	A or SA	13	27	7.195	.01	21	21	.017	
	D or SD	77	59			67	64		
74	A or SA	37	28	1.381					
	D or SD	53	58						
75	A or SA	33	34	.153					
	D or SD	57	52						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	P	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	P
76	A or SA	24	27	.478					
	D or SD	66	59						
77	A or SA	19	41	13.810	.01	20	24	.692	
	D or SD	71	45			68	61		
78	A or SA	86	79	1.025					
	D or SD	04	07						
79	A or SA	76	64	2.717	.10	82	65	9.455	.01
	D or SD	14	22			06	20		
80	A or SA	45	45	.095					
	D or SD	45	41						
81	A or SA	40	52	4.524	.05	49	42	.682	
	D or SD	50	34			39	43		
82	A or SA	42	31	2.043	.20	28	23	.471	
	D or SD	48	55			60	62		
83	A or SA	18	22	.780					
	D or SD	72	64						
84	A or SA	32	28	.176					
	D or SD	58	58						
85	A or SA	88	79	3.174	.10	85	81	.187	
	D or SD	02	07			03	04		
86	A or SA	66	67	.498					
	D or SD	24	19						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Chi Square	p	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
87	A or SA	07	08	.131					
	D or SD	83	78						
88	A or SA	66	64	.027					
	D or SD	24	22						
89	A or SA	84	74	2.543	.20	83	72	4.285	.05
	D or SD	06	12			05	13		
90	A or SA	56	43	2.669	.20	56	40	4.811	.05
	D or SD	34	43			32	45		
91	A or SA	32	39	1.753	.20	30	38	2.042	.20
	D or SD	58	47			58	47		
92	A or SA	66	67	.498					
	D or SD	24	19						
93	A or SA	75	67	.831					
	D or SD	15	19						
94	A or SA	63	48	3.800	.05	64	63	.043	
	D or SD	27	38			24	22		
95	A or SA	44	39	.221					
	D or SD	46	47						
96	A or SA	72	70	.055					
	D or SD	18	16						
97	A or SA	37	31	.476					
	D or SD	53	55						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Validation Chi Square	Validation P	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Cross-Validation Chi Square	Cross-Validation P
98	A or SA	33	34	.153					
	D or SD	57	52						
99	A or SA	89	83	1.119					
	D or SD	01	03						
100	A or SA	67	67	.290					
	D or SD	23	19						
101	A or SA	77	78	1.107					
	D or SD	13	08						
102	A or SA	85	76	2.080	.20	83	79	.138	
	D or SD	05	10			05	06		
103	A or SA	87	85	.933					
	D or SD	03	01						
104	A or SA	82	78	.009					
	D or SD	08	08						
105	A or SA	65	64	.108					
	D or SD	25	22						
106	A or SA	13	15	.295					
	D or SD	77	71						
107	A or SA	75	74	.249					
	D or SD	15	12						
108	A or SA	71	65	.274					
	D or SD	19	21						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory *Female* Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	P	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	P
109	A or SA	77	69	.881					
	D or SD	13	17						
110	A or SA	78	70	.913					
	D or SD	12	16						
111	A or SA	89	77	7.180	.01	84	78	.989	
	D or SD	01	09			04	07		
112	A or SA	19	24	1.100					
	D or SD	71	62						
113	A or SA	89	76	8.301	.01	83	74	2.715	.20
	D or SD	01	10			05	11		
114	A or SA	01	12	10.603	.01	10	08	.177	
	D or SD	89	74			78	77		
115	A or SA	60	62	.609					
	D or SD	30	24						
116	A or SA	27	40	5.085	.05	23	38	6.531	.05
	D or SD	63	46			65	47		
117	A or SA	38	38	.069					
	D or SD	52	48						
118	A or SA	88	75	7.180	.01	83	76	1.399	
	D or SD	02	11			05	09		
119	A or SA	66	64	.027					
	D or SD	24	22						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	P	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	P
120	A or SA	48	44	.083					
	D or SD	42	42						
121	A or SA	48	48	.109					
	D or SD	42	38						
122	A or SA	37	31	.476					
	D or SD	53	55						
123	A or SA	66	59	.478					
	D or SD	24	27						
124	A or SA	78	71	.572					
	D or SD	12	15						
125	A or SA	28	23	.408					
	D or SD	62	63						
126	A or SA	85	76	2.080	.20	86	77	4.046	.05
	D or SD	05	10			02	08		
127	A or SA	66	74	4.368	.05	65	66	9.877	.01
	D or SD	24	12			03	19		
128	A or SA	59	54	.146					
	D or SD	31	32						
129	A or SA	14	18	.854					
	D or SD	76	68						
130	A or SA	10	27	10.898	.01	15	17	.250	
	D or SD	80	59			73	68		

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=90)	Validation Under-Achiever (N=86)	Chi Square	P	Cross-Validation Over-Achiever (N=88)	Cross-Validation Under-Achiever (N=85)	Chi Square	P
131	A or SA	86	75	3.929	.05	84	73	4.720	
	D or SD	04	11			04	12		
132	A or SA	65	60	.129					
	D or SD	25	26						
133	A or SA	86	76	3.099	.10	87	79	3.906	.05
	D or SD	04	10			01	06		
134	A or SA	84	75	1.890	.20	86	80	1.451	
	D or SD	06	11			02	05		
135	A or SA	73	68	.115					
	D or SD	17	18						
136	A or SA	78	67	2.325	.20	82	67	7.460	
	D or SD	12	19			06	18		
137	A or SA	87	82	.200					
	D or SD	03	04						
138	A or SA	21	26	1.069					
	D or SD	69	60						
139	A or SA	86	78	1.634	.20	83	70	6.054	.05
	D or SD	04	08			05	15		
140	A or SA	11	20	3.689	.10	09	18	3.935	.05
	D or SD	79	66			79	67		
141	A or SA	67	69	.839					
	D or SD	23	17						

Table F.4 (Continued)

Perceived Parental Attitudes Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over- Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=90)	Under-Achiever (N=86)	Chi Square	p	Over-Achiever (N=88)	Under-Achiever (N=85)	Chi Square	p
142	A or SA	83	70	4.538	.05	74	63	2.610	.20
	D or SD	07	16			14	22		
143	A or SA	51	50	.039					
	D or SD	39	36						
144	A or SA	35	49	5.767	.05	35	42	1.627	
	D or SD	55	37			53	43		
145	A or SA	81	73	1.052					
	D or SD	09	13						
146	A or SA	59	70	5.637	.05	64	64	.148	
	D or SD	31	16			24	21		
147	A or SA	86	79	1.025					
	D or SD	04	07						
148	A or SA	35	33	.005					
	D or SD	55	53						
149	A or SA	42	46	.819					
	D or SD	48	40						
150	A or SA	23	27	.737					
	D or SD	67	59						

Table F.5

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: C = Cognitive Response
A = Affective Response

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=87)	Under-Achiever (N=69)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=69)	Chi Square	p
1	C	49	36	.267					
	A	38	33						
2	C	22	09	3.623	.10	26	10	5.906	.05
	A	65	60			57	59		
3	C	23	07	6.576	.01	29	14	3.986	.05
	A	64	62			54	55		
4	C	20	13	.397					
	A	67	56						
5	C	06	06	.175					
	A	81	63						
6	C	22	20	.267					
	A	65	49						
7	C	59	33	6.356	.05	58	39	2.911	.10
	A	28	36			25	30		
8	C	37	31	.090					
	A	50	38						
9	C	27	11	4.757	.05	27	19	.443	
	A	60	58			56	50		

Table F.5 (Continued)

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=69)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=69)	Cross-Validation Chi Square	Cross-Validation p
10	C	23	20	.125					
	A	64	49						
11	C	22	18	.013					
	A	65	51						
12	C	07	05	.035					
	A	80	64						
13	C	23	14	.804					
	A	64	55						
14	C	41	34	.071					
	A	46	35						
15	C	37	33	.437					
	A	50	36						
16	C	48	33	.832					
	A	39	36						
17	C	17	24	4.614	.05	31	23	.265	
	A	70	45			52	46		
18	C	33	22	.616					
	A	54	47						
19	C	11	08	.040					
	A	76	61						
20	C	31	23	.090					
	A	56	46						

Table F.5 (Continued)

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=69)	Chi Square	P	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=69)	Chi Square	P
21	C	35	28	.002					
	A	52	41						
22	C	28	32	3.375	.10	42	27	2.000	.20
	A	59	37			41	42		
23	C	40	32	.002					
	A	47	37						
24	C	29	09	8.600	.01	30	15	3.752	.10
	A	58	60			53	54		
25	C	29	20	.338					
	A	58	49						
26	C	16	13	.005					
	A	71	56						
27	C	35	24	.486					
	A	52	45						
28	C	37	18	4.557	.05	32	13	7.026	.01
	A	50	51			51	56		
29	C	20	23	2.063	.20	22	21	.287	
	A	67	46			61	48		
30	C	27	30	2.570	.20	34	22	1.335	
	A	60	39			49	47		
31	C	28	16	1.538					
	A	59	53						

Table F.5 (Continued)

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
32	C	33	24	.165					
	A	54	45						
33	C	18	10	1.003					
	A	69	59						
34	C	41	29	.404					
	A	46	40						
35	C	41	23	3.026	.10	40	21	4.945	.05
	A	46	46			43	48		
36	C	21	21	.776					
	A	66	48						
37	C	25	23	.382					
	A	62	46						
38	C	21	11	1.585					
	A	66	58						
39	C	30	18	1.273					
	A	57	51						
40	C	26	16	.877					
	A	61	53						
41	C	39	24	1.613	.20	35	29	.000	
	A	48	45			48	40		
42	C	42	36	.234					
	A	45	33						

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Table F.5 (Continued)

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
43	C	29	23	.000					
	A	58	46						
44	C	30	22	.117					
	A	57	47						
45	C	21	10	2.248	.20	15	10	.351	
	A	66	59			68	59		
46	C	22	19	.100					
	A	65	50						
47	C	24	15	.702					
	A	63	54						
48	C	08	09	.587					
	A	79	60						
49	C	47	29	2.216	.20	47	30	2.606	.20
	A	40	40			36	39		
50	C	31	33	2.365	.20	40	28	.883	
	A	56	36			43	41		
51	C	31	21	.468					
	A	56	48						
52	C	17	12	.117					
	A	70	57						
53	C	14	18	2.358	.10	23	12	2.264	.20
	A	73	51			60	57		

Table F.5 (Continued)

Preferred Teacher Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=87)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
54	C	20	15	.035					
	A	67	54						
55	C	09	12	1.640	.20	24	10	4.514	.05
	A	78	57			59	59		
56	C	40	34	.168					
	A	47	35						
57	C	29	25	.143					
	A	58	44						
58	C	41	29	.404					
	A	46	40						
59	C	21	14	.327					
	A	66	55						
60	C	20	15	.035					
	A	67	54						
61	C	25	12	2.737	.10	24	17	.350	
	A	62	57			59	52		
62	C	11	10	.113					
	A	76	59						
63	C	38	24	1.272					
	A	49	45						
64	C	38	32	.113					
	A	49	37						

Table F.6

Preferred Teacher Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: C = Cognitive Response
A = Affective Response

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
1	C	57	50	.193					
	A	39	39						
2	C	28	16	3.190	.10	19	13	.853	
	A	68	73			72	71		
3	C	29	14	5.426	.05	20	12	1.730	.20
	A	67	75			71	72		
4	C	08q	04	1.122					
	A	88	85						
5	C	08	09	.175					
	A	88	80						
6	C	25	20	.320					
	A	71	69						
7	C	63	42	6.394	.05	56	45	1.136	
	A	33	47			35	39		
8	C	49	43	.137					
	A	47	46						
9	C	30	26	.091					
	A	66	63						

Table F.6 (Continued)

Preferred Teacher Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
10	C	36	34	.010					
	A	60	55						
11	C	14	14	.047					
	A	82	75						
12	C	07	05	.213					
	A	89	84						
13	C	27	21	.493					
	A	69	68						
14	C	48	38	.990					
	A	48	51						
15	C	43	34	.825					
	A	53	55						
16	C	49	41	.457					
	A	47	48						
17	C	34	28	.324					
	A	62	61						
18	C	25	29	.956					
	A	71	60						
19	C	12	12	.340					
	A	84	77						
20	C	25	20	.320					
	A	71	69						

Table F.6 (Continued)

Preferred Teacher Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
21	C	35	34	.060					
	A	61	55						
22	C	32	37	1.341					
	A	64	52						
23	C	54	43	1.166					
	A	42	46						
24	C	28	23	.256					
	A	68	66						
25	C	19	23	.964					
	A	77	66						
26	C	13	25	5.989	.05	15	07	2.640	.20
	A	83	64			76	77		
27	C	35	28	.514					
	A	61	61						
28	C	28	26	.000					
	A	68	63						
29	C	28	24	.111					
	A	68	65						
30	C	34	33	.055					
	A	62	56						
31	C	40	25	3.735	.10	37	24	2.811	.10
	A	56	64			54	60		

Table F.6 (Continued)

Preferred Teacher Characteristics Scale **Female** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
32	C	32	28	.074					
	A	64	61						
33	C	19	16	.099					
	A	77	73						
34	C	51	50	.174					
	A	45	39						
35	C	40	33	.407					
	A	56	56						
36	C	26	30	.960					
	A	70	59						
37	C	35	29	.306					
	A	61	60						
38	C	20	23	.650					
	A	76	66						
39	C	31	35	.996					
	A	65	54						
40	C	14	17	.676					
	A	82	72						
41	C	50	51	.508					
	A	46	38						
42	C	54	51	.021					
	A	42	38						

Table F.6 (Continued)

Preferred Teacher Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
43	C	29	36	2.125	.20	30	23	.646	
	A	67	53			61	61		
44	C	31	31	.134					
	A	65	58						
45	C	19	14	.520					
	A	77	75						
46	C	19	21	.394					
	A	77	68						
47	C	23	30	.057					
	A	73	69						
48	C	14	16	.392					
	A	82	73						
49	C	49	50	.490					
	A	47	39						
50	C	44	40	.015					
	A	52	49						
51	C	45	37	.731					
	A	51	32						
52	C	15	08	1.868	.20	20	11	2.364	.20
	A	81	81			71	73		
53	C	18	15	.113					
	A	78	74						

Table F.6 (Continued)

Preferred Teacher Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=96)	Validation Under-Achiever (N=89)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
54	C	08	14	2.412	.20	12	13	.187	
	A	88	75			79	71		
55	C	17	14	.130					
	A	79	75						
56	C	47	40	.299					
	A	49	49						
57	C	42	41	.100					
	A	54	48						
58	C	54	43	1.166					
	A	42	46						
59	C	24	19	.345					
	A	72	70						
60	C	15	13	.037					
	A	81	76						
61	C	08	13	1.806	.20	15	20	1.465	
	A	88	76			76	64		
62	C	12	10	.070					
	A	84	79						
63	C	41	35	.218					
	A	55	54						
64	C	43	35	.566					
	A	53	54						

Table F.7

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: U = Usually N = Never
A = Always S = Sometimes

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=81)	Under-Achievar (N=69)	Chi Square	p	Over-Achiever (N=76)	Under-Achiever (N=68)	Chi Square	p
1	U or A	13	11	.000					
	N or S	68	58						
2	U or A	06	03	.618					
	N or S	75	66						
3	U or A	58	40	3.058	.10	53	37	3.596	.10
	N or S	23	29			23	31		
4									
5	U or A	08	17	5.845	.05	16	10	.977	
	N or S	73	52			60	58		
6	U or A	35	24	1.109					
	N or S	46	45						
7	U or A	14	12	.000					
	N or S	67	57						
8									
9	U or A	12	25	9.197	.01	20	24	1.363	
	N or S	69	44			56	44		

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Cross-Validation Chi Square	Cross-Validation p
10	U or A	48	36	.759					
	N or S	33	33						
11	U or A	52	42	.176					
	N or S	29	27						
12									
13	U or A	32	20	1.821	.20	28	27	.125	
	N or S	49	49			48	41		
14	U or A	27	22	.036					
	N or S	54	47						
15	U or A	28	24	.001					
	N or S	53	45						
16	U or A	16	20	1.741	.20	14	25	6.115	.05
	N or S	65	49			62	43		
17									
18	U or A	68	54	.795					
	N or S	13	15						
19	U or A	17	09	1.641	.20				
	N or S	64	60						
20									

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Cross-Validation Chi Square	Cross-Validation p
21	U or A	14	14	.222					
	N or S	67	55						
22	U or A	24	25	.738					
	N or S	57	44						
23									
24									
25	U or A	02	07	3.892	.05	04	06	.704	
	N or S	79	62			72	62		
26									
27	U or A	64	46	2.904	.10	63	39	11.333	.01
	N or S	17	23			13	29		
28									
29	U or A	13	27	10.150	.01	14	26	7.023	.01
	N or S	68	42			62	42		
30	U or A	23	17	.269					
	N or S	58	52						
31									

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=81)	Under-Achiever (N=69)	Chi Square	p	Over-Achiever (N=76)	Under-Achiever (N=68)	Chi Square	p
32	U or A	35	33	.320					
	N or S	46	36						
33	U or A	40	25	2.624	.20	41	29	1.834	.20
	N or S	41	44			35	39		
34	U or A	10	13	1.211					
	N or S	71	56						
35	U or A	14	11	.048					
	N or S	67	58						
36									
37	U or A	14	20	2.911	.10	09	25	12.359	.01
	N or S	67	49			67	43		
38	U or A	64	55	.011					
	N or S	17	14						
39									
40	U or A	24	22	.089					
	N or S	57	47						
41	U or A	09	12	1.221					
	N or S	72	57						
42	U or A	15	12	.032					
	N or S	66	57						

Table F.7 (Continued)

Human Trait Inventory **Male** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
43	U or A	33	34	1.098					
	N or S	48	35						
44									
45	U or A	24	21	.012					
	N or S	57	48						
46									
47	U or A	09	12	1.221					
	N or S	72	57						
48	U or A	25	22	.018					
	N or S	56	47						
49	U or A	36	32	.056					
	N or S	45	37						
50	U or A	14	26	7.927	.01	17	27	5.084	.05
	N or S	67	43			59	41		
51									
52	U or A	05	11	3.732	.10	05	13	5.159	.05
	N or S	76	58			71	55		
53	U or A	73	46	12.504	.01	67	45	10.033	.01
	N or S	08	23			09	23		

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Chi Square	P	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Chi Square	P
54	U or A	19	36	13.232	.01	13	27	9.138	.01
	N or S	62	33			63	41		
55									
56	U or A	19	20	.592					
	N or S	62	49						
57	U or A	18	29	6.794	.01	09	23	10.033	.01
	N or S	63	40			67	45		
58									
59	U or A	36	31	.004					
	N or S	45	38						
60	U or A	38	22	3.507	.10	40	27	2.410	.20
	N or S	43	47			36	41		
61									
62									
63									
64									

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=81)	Under-Achiever (N=69)	Chi Square	p	Over-Achiever (N=76)	Under-Achiever (N=68)	Chi Square	p
65									
66	U or A	07	24	15.529	.01	11	17	2.539	.20
	N or S	74	45			65	51		
67	U or A	03	08	3.414	.10	04	14	7.706	.01
	N or S	78	61			72	54		
68	U or A	14	30	12.333	.01	17	24	2.944	.10
	N or S	67	39			59	44		
69	U or A	31	36	2.914	.10	31	40	4.670	.05
	N or S	50	33			45	28		
70									
71									
72	U or A	78	41	30.903	.01	73	46	20.184	.01
	N or S	03	28			03	22		
73	U or A	16	13	.020					
	N or S	65	56						
74	U or A	29	14	4.385	.05	29	12	7.414	.01
	N or S	52	55			47	56		
75	U or A	66	39	11.054	.01	64	35	17.906	.01
	N or S	15	30			12	33		

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	Under-Achiever (N=68)	Chi Square	p
76	U or A	29	26	.057					
	N or S	52	43						
77									
78	U or A	34	22	1.622	.20	33	26	.399	
	N or S	47	47			43	42		
79	U or A	03	14	6.713	.01	04	12	5.573	.05
	N or S	76	55			72	56		
80	U or A	16	19	1.262					
	N or S	65	50						
81	U or A	05	05	.069					
	N or S	76	64						
82	U or A	08	14	3.228	.10	07	11	1.592	
	N or S	73	55			69	57		
83									
84	U or A	40	24	3.247	.10	32	23	1.043	
	N or S	41	45			44	45		
85	U or A	05	10	2.866	.10	05	09	1.812	.20
	N or S	76	59			71	59		
86									

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
87	U or A	03	06	1.646	.20	04	06	.704	
	N or S	78	63			72	62		
88	U or A	01	07	5.859	.05	03	04	.291	
	N or S	80	62			73	64		
89	U or A	47	24	8.074	.01	51	29	8.695	.01
	N or S	34	45			25	39		
90	U or A	19	11	1.315					
	N or S	62	58						
91	U or A	10	11	3.432	.10	05	08	1.175	
	N or S	21	58			71	60		
92	U or A	62	47	1.332					
	N or S	19	22						
93	U or A	81	53	21.025	.01	72	56	5.573	.05
	N or S	00	16			04	12		
94									
95									
96	U or A	15	25	5.978	.05	12	18	2.483	.20
	N or S	66	44			64	50		
97	U or A	02	10	7.319	.01	01	06	4.374	
	N or S	79	59			75	62		

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
98	U or A	11	15	1.731	.20	07	14	3.730	.10
	N or S	70	54			69	54		
99	U or A	21	23	.986					
	N or S	60	46						
100	U or A	58	45	.707					
	N or S	23	24						
101	U or A	14	30	12.333	.01	17	26	4.314	.05
	N or S	67	39			59	42		
102	U or A	37	35	.380					
	N or S	44	34						
103	U or A	70	44	10.481	.01	60	53	.022	
	N or S	11	25			16	15		
104									
105	U or A	64	41	6.811	.01	58	36	14.109	.01
	N or S	17	28			18	41		
106	U or A	14	15	.474					
	N or S	67	54						
107	U or A	38	31	.059					
	N or S	43	38						
108									

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever ((N=81)	 Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	 Under-Achiever (N=68)	Chi Square	p
109	U or A	19	13	.473					
	N or S	62	56						
110	U or A	53	33	4.721	.05	52	38	2.407	.20
	N or S	28	36			24	30		
111	U or A	14	15	.474					
	N or S	67	54						
112	U or A	18	12	1.821	.20	02	07	3.596	
	N or S	73	57			74	61		
113	U or A	29	28	.361					
	N or S	52	41						
114									
115	U or A	08	08	.115					
	N or S	73	61						
116	U or A	35	23	1.533					
	N or S	46	46						
117	U or A	52	42	.176					
	N or S	29	27						
118	U or A	09	13	1.779	.20	10	12	.559	
	N or S	72	56			66	56		
119	U or A	14	10	.216					
	N or S	67	59						

Table F.7 (Continued)

Human Trait Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=81)	Validation Under-Achiever (N=69)	Chi Square	p	Cross-Validation Over-Achiever (N=76)	Cross-Validation Under-Achiever (N=68)	Chi Square	p
120	U or A	04	10	4.020	.05	04	09	2.777	.10
	N or S	77	59			72	59		
121	U or A	19	14	.218					
	N or S	62	55						
122	U or A	57	38	3.755	.10	55	32	9.613	.01
	N or S	24	31			21	36		
123	U or A	04	10	4.020	.05	04	09	2.777	.10
	N or S	77	59			72	59		
124	U or A	14	26	7.927	.01	06	21	12.449	.01
	N or S	67	43			70	47		
125	U or A	27	24	.035					
	N or S	54	45						

Table F.8

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: U = Usually N = Never
A = Always S = Sometimes

Item	Response	Validation Over-Achiever (N=91)	Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Under-Achiever (N=84)	Chi Square	p
1	U or A	33	38	1.301					
	N or S	58	47						
2	U or A	12	12	.032					
	N or S	79	73						
3	U or A	71	63	.369					
	N or S	20	22						
4									
5	U or A	19	27	2.698	.20	19	34	6.941	.01
	N or S	72	58			68	50		
6	U or A	58	48	.969					
	N or S	33	37						
7	U or A	20	18	.017					
	N or S	71	67						
8									
9	U or A	20	29	3.224	.10	16	38	14.257	.01
	N or S	71	56			71	46		

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
10	U or A	18	26	2.738	.10	23	25	.234	
	N or S	73	59			64	59		
11	U or A	57	40	4.311	.05	49	30	7.302	.01
	N or S	34	45			38	54		
12									
13	U or A	36	22	3.721	.10	33	26	.921	
	N or S	55	63			54	58		
14	U or A	28	24	.136					
	N or S	63	61						
15	U or A	55	36	5.757	.05	40	36	.168	
	N or S	36	49			47	48		
16	U or A	25	17	1.351					
	N or S	66	68						
17									
18	U or A	79	67	1.984	.20	70	67	.013	
	N or S	12	18			17	17		
19	U or A	19	13	.922					
	N or S	72	72						
20									

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=91)	Under-Achiever (N=85)	Chi Square	p	Over-Achiever (N=87)	Under-Achiever (N=84)	Chi Square	p
21	U or A	12	09	.282					
	N or S	79	76						
22	U or A	64	64	.546					
	N or S	27	21						
23									
24									
25	U or A	03	05	.677					
	N or S	88	80						
26									
27	U or A	68	56	1.651	.20	65	55	1.742	.20
	N or S	23	29			22	29		
28	U or A	24	31	2.085	.20	32	33	.114	
	N or S	67	54			55	51		
29	U or A	10	24	8.367	.01	10	20	4.481	.05
	N or S	81	61			77	64		
30	U or A	40	44	1.074					
	N or S	51	41						
31									

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	P	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	P
32	U or A	23	32	3.131	.10	21	27	1.356	
	N or S	68	53			66	57		
33	U or A	17	12	.665					
	N or S	74	73						
34	U or A	11	10	.004					
	N or S	80	85						
35	U or A	11	11	.029					
	N or S	80	74						
36									
37	U or A	09	23	8.708	.01	12	19	2.243	.20
	N or S	82	62			75	65		
38	U or A	87	68	10.184	.01	80	73	1.157	
	N or S	04	17			07	11		
39									
40	U or A	30	28	.000					
	N or S	61	57						
41	U or A	22	12	2.853	.10	13	08	1.165	
	N or S	69	73			74	76		
42	U or A	19	19	.056					
	N or S	72	66						

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=91)	Under-Achiever (N=85)	Chi Square	p	Over-Achiever (N=87)	Under-Achiever (N=84)	Chi Square	p
43	U or A	32	37	1.290					
	N or S	59	48						
44									
45	U or A	07	14	3.223	.10	11	11	.008	
	N or S	84	71			76	73		
46									
47	U or A	18	14	.324					
	N or S	73	71						
48	U or A	33	38	1.301					
	N or S	58	47						
49	U or A	34	42	2.601	.20	44	46	.301	
	N or S	57	43			43	38		
50	U or A	31	47	8.026	.01	27	40	4.933	.05
	N or S	60	38			60	44		
51									
52	U or A	01	10	8.533	.01	01	05	2.912	.10
	N or S	90	75			86	79		
53	U or A	86	64	12.883	.01	82	70	5.159	.05
	N or S	05	21			05	14		

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
54	U or A	20	25	1.276					
	N or S	71	60						
55									
56	U or A	27	28	.219					
	N or S	64	57						
57	U or A	14	19	1.400					
	N or S	77	66						
58									
59	U or A	50	34	3.935	.05	53	41	2.532	.20
	N or S	41	51			34	43		
60	U or A	53	35	5.120	.05	45	29	5.151	.05
	N or S	38	50			42	55		
61									
62									
63									
64									

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Cross-Validation Chi Square	Cross-Validation p
65									
66	U or A	09	24	9.709	.01	13	22	3.322	.10
	N or S	82	61			74	62		
67	U or A	01	04	2.072	.20	01	02	.376	
	N or S	90	81			86	82		
68	U or A	20	27	2.151	.20	22	32	3.245	.10
	N or S	71	58			65	52		
69	U or A	32	47	7.198	.01	30	32	.241	
	N or S	59	38			57	52		
70									
71									
72	U or A	87	59	21.323	.01	82	64	11.170	.01
	N or S	04	26			05	20		
73	U or A	19	30	4.546	.05	13	19	1.656	.20
	N or S	72	55			74	65		
74	U or A	37	16	9.957	.01	32	15	7.679	.01
	N or S	54	69			55	69		
75	U or A	73	57	3.943	.05	73	47	15.958	.01
	N or S	18	28			14	37		

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
76	U or A	15	35	13.176	.01	29	32	.422	
	N or S	76	50			58	52		
77									
78	U or A	27	23	.147					
	N or S	64	62						
79	U or A	01	04	2.072	.20	00	03	3.163	.10
	N or S	90	81			87	81		
80	U or A	12	22	4.545	.05	08	20	6.666	.01
	N or S	79	63			79	64		
81	U or A	61	51	.939					
	N or S	30	34						
82	U or A	04	16	9.083	.01	03	12	6.272	.05
	N or S	87	69			84	72		
83									
84	U or A	56	38	5.004	.05	54	36	6.327	.05
	N or S	35	47			33	48		
85	U or A	03	19	14.592	.01	04	08	1.589	
	N or S	88	66			83	76		
86									

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Under-Achiever (N=84)	Chi Square	p
87	U or A	03	04	.229					
	N or S	88	81						
88	U or A	02	06	2.393	.20	01	06	3.910	.05
	N or S	89	79			86	78		
89	U or A	58	33	10.923	.01	52	30	9.909	.01
	N or S	33	52			35	54		
90	U or A	30	18	3.080	.10	25	14	3.536	.10
	N or S	61	67			62	70		
91	U or A	12	17	1.482					
	N or S	79	68						
92	U or A	69	43	12.095	.01	47	41	.465	
	N or S	22	42			40	43		
93	U or A	86	62	15.277	.01	79	66	4.961	.05
	N or S	05	23			08	18		
94									
95									
96	U or A	12	11	.002					
	N or S	79	74						
97	U or A	03	09	3.678	.10	02	08	4.052	.05
	N or S	88	76			85	76		

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
98	U or A	16	13	.167					
	N or S	75	72						
99	U or A	20	25	1.276					
	N or S	71	60						
100	U or A	74	56	5.425	.05	65	63	.002	
	N or S	17	29			22	21		
101	U or A	16	31	8.011	.01	19	22	.444	
	N or S	75	54			68	62		
102	U or A	36	48	5.037	.05	33	41	2.060	.20
	N or S	55	37			54	43		
103	U or A	86	66	10.606	.01	83	74	3.036	.10
	N or S	05	19			04	10		
104									
105	U or A	75	54	8.011	.01	68	53	4.688	.05
	N or S	16	31			19	31		
106	U or A	13	14	.162					
	N or S	78	71						
107	U or A	44	43	.088					
	N or S	47	42						
108									

Table F.8 (Continued)

Human Trait Inventory **Female** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achiever

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	P	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	P
109	U or A	18	16	.026					
	N or S	73	69						
110	U or A	63	31	18.955	.01	56	42	3.606	.10
	N or S	28	54			31	42		
111	U or A	16	23	3.533	.10	06	10	1.264	
	N or S	75	62			81	74		
112	U or A	03	05	.677					
	N or S	88	80						
113	U or A	43	34	.939					
	N or S	48	51						
114									
115	U or A	05	08	.986					
	N or S	86	77						
116	U or A	24	16	1.427					
	N or S	67	69						
117	U or A	69	52	4.389	.05	69	57	2.891	.10
	N or S	22	33			18	27		
118	U or A	08	15	3.034	.10	05	16	7.018	.01
	N or S	83	70			82	68		
119	U or A	13	18	1.438					
	N or S	78	67						

Table F.8 (Continued)

Human Trait Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achiever

Item	Response	Validation Over-Achiever (N=91)	Validation Under-Achiever (N=85)	Chi Square	p	Cross-Validation Over-Achiever (N=87)	Cross-Validation Under-Achiever (N=84)	Chi Square	p
120	U or A	03	10	4.607	.05	05	10	2.025	.20
	N or S	88	75			82	74		
121	U or A	13	17	1.015					
	N or S	78	68						
122	U or A	67	36	17.708	.01	59	41	6.358	.05
	N or S	24	49			28	43		
123	U or A	06	09	.900					
	N or S	85	76						
124	U or A	02	14	10.833	.01	02	12	8.169	.01
	N or S	89	71			85	72		
125	U or A	35	32	.012					
	N or S	56	53						

Table F.9

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = N-Achievement
B = Non N-Achievement

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
1	A	65	44	.945					
	B	23	22						
2	A	84	56	5.133	.05	79	62	3.056	.10
	B	04	10			04	09		
3	A	51	37	.055					
	B	37	29						
4	A	34	23	.232					
	B	54	43						
5	A	50	41	.439					
	B	38	25						
6	A	83	61	.223					
	B	05	05						
7	A	51	37	.055					
	B	37	29						
8	A	21	34	12.560	.01	24	60	63.054	.01
	B	67	32			79	11		
9	A	74	52	.713					
	B	14	14						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
10	A	08	11	2.001	.20	11	09	.011	
	B	80	55			72	62		
11	A	53	40	.002					
	B	35	26						
12	A	56	43	.038					
	B	32	23						
13	A	12	14	1.542					
	B	76	52						
14	A	40	26	.566					
	B	48	40						
15	A	30	16	1.746	.20	19	15	.069	
	B	58	50			64	56		
16	A	19	18	.667					
	B	69	48						
17	A	83	56	3.847	.05	79	68	.031	
	B	05	10			04	03		
18	A	58	36	2.048	.20	43	29	1.847	.20
	B	30	30			40	42		
19	A	50	30	1.951	.20	36	28	.244	
	B	38	36			47	43		
20	A	78	55	.901					
	B	10	11						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
21	A	53	28	4.794	.05	48	14	23.111	.01
	B	35	38			35	57		
22	A	71	53	.003					
	B	17	13						
23	A	68	53	.206					
	B	20	13						
24	A	57	24	12.208	.01	53	40	.904	
	B	31	42			30	31		
25	A	33	22	.285					
	B	55	44						
26	A	54	31	3.160	.10	51	37	1.361	
	B	34	35			32	34		
27	A	40	45	7.877	.01	51	44	.004	
	B	48	21			32	27		
28	A	25	23	.729					
	B	63	43						
29	A	63	39	2.635	.20	68	43	8.679	.01
	B	25	27			15	28		
30	A	31	31	2.162	.20	34	25	.536	
	B	57	35			49	46		
31	A	58	45	.088					
	B	30	21						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
32	A	62	51	.897					
	B	26	15						
33	A	74	43	7.411	.01	71	49	6.076	.05
	B	14	23			12	22		
34	A	24	18	.000					
	B	64	48						
35	A	82	60	.271					
	B	06	06						
36	A	72	43	5.540	.05	53	42	.358	
	B	16	23			30	29		
37	A	66	27	18.324	.01	63	34		
	B	22	39			20	37	12.883	.01
38	A	35	22	.671					
	B	53	44						
39	A	50	27	3.818	.05	37	33	.056	
	B	38	39			46	38		
40	A	38	18	4.125	.05	37	32	.004	
	B	50	48			46	39		
41	A	78	49	5.404	.01	68	52	1.679	
	B	10	17			15	19		
42	A	71	55	.178					
	B	17	11						

Table F.9 (Continued)

Generalized Situational Choice Inventory **Male** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Cross-Validation Chi Square	Cross-Validation p
43	A	63	50	.335					
	B	25	16						
44	A	73	40	9.642	.01	76	50	11.500	.01
	B	15	26			07	21		
45	A	58	33	3.949	.05	46	24	7.214	.01
	B	30	33			37	47		
46	A	38	32	.428					
	B	50	34						
47	A	50	30	1.951	.20	49	39	.264	
	B	38	36			34	32		
48	A	23	21	.597					
	B	65	45						
49	A	63	32	8.520	.01	65	44	4.941	.05
	B	25	34			18	27		
50	A	83	56	3.847	.05	82	61	9.571	.01
	B	05	10			01	10		
51	A	76	59	.320					
	B	12	07						
52	A	72	41	7.490	.01	69	37	17.163	.01
	B	16	25			14	34		
53	A	81	44	15.892	.01	71	53	2.895	.10
	B	07	22			12	18		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
54	A	52	42	.328					
	B	36	24						
55	A	69	58	2.339	.20	73	63	.023	
	B	19	08			10	08		
56	A	80	55	2.001	.20	75	51	8.833	.01
	B	08	11			08	20		
57	A	48	30	1.247					
	B	40	36						
58	A	72	52	.221					
	B	16	14						
59	A	48	25	4.202	.05	41	24	3.815	.01
	B	40	41			42	47		
60	A	49	27	3.293	.10	49	27	6.756	.05
	B	39	39			34	44		
61	A	45	16	11.404	.01	35	27	.273	
	B	43	50			48	44		
62	A	82	57	1.994	.20	74	57	2.372	
	B	06	09			09	14		
63	A	69	43	3.342	.10	63	36	10.584	.01
	B	19	23			20	35		
64	A	42	28	.428					
	B	46	38						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
65	A	78	55	.900					
	B	10	11						
66	A	20	19	.733					
	B	68	47						
67	A	65	39	3.754	.10	63	40	6.614	.01
	B	23	27			20	31		
68	A	67	43	2.230	.20	63	48	1.309	
	B	21	23			20	23		
69	A	72	48	1.812	.20	69	53	1.673	
	B	16	18			14	18		
70	A	70	45	2.575	.20	68	48	4.223	.05
	B	18	21			15	23		
71	A	53	32	2.103	.20	54	32	6.201	.05
	B	35	34			29	39		
72	A	45	23	4.058	.05	28	25	.037	
	B	43	43			55	46		
73	A	66	38	5.222	.05	62	49	5.162	.05
	B	22	28			11	22		
74	A	78	53	2.061	.20	75	52	7.759	.01
	B	10	13			08	19		
75	A	43	37	.783					
	B	45	29						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
76	A	82	59	.700					
	B	06	07						
77	A	77	59	.131					
	B	11	07						
78	A	73	47	3.023	.10	66	48	2.824	.10
	B	15	19			17	23		
79	A	72	53	.057					
	B	16	13						
80	A	73	52	.428					
	B	15	14						
81	A	45	20	6.711	.01	46	21	10.399	.01
	B	43	46			37	50		
82	A	63	42	1.100					
	B	25	24						
83	A	77	54	.958					
	B	11	12						
84	A	33	18	1.781	.20	30	16	3.383	.10
	B	55	48			53	55		
85	A	39	31	.058					
	B	49	36						
86	A	70	45	2.575	.20	74	51	7.515	.01
	B	18	21			09	20		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
87	A	37	34	1.361					
	B	51	32						
88	A	80	50	6.581	.01	82	56	16.313	.01
	B	08	16			01	15		
89	A	67	53	.381					
	B	21	13						
90	A	81	60	.063					
	B	07	06						
91	A	68	38	6.820	.01	64	52	.308	
	B	20	28			19	19		
92	A	21	18	.001					
	B	67	58						
93	A	55	37	.650					
	B	33	29						
94	A	59	38	1.451					
	B	29	28						
95	A	79	48	7.579	.01	74	57	2.372	
	B	09	18			09	14		
96	A	56	25	10.036	.01	48	29	8.976	.01
	B	32	41			35	42		
97	A	64	35	6.373	.05	56	48	.000	
	B	24	31			27	23		

Table F.9 (Continued)

Generalized Situational Choice Inventory **Male** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Cross-Validation Chi Square	Cross-Validation p
98	A	74	47	3.715	.10	68	55	.474	
	B	14	19			15	16		
99	A	50	34	.428					
	B	38	32						
100	A	50	23	7.301	.10	40	36	.097	
	B	38	43			43	35		
101	A	54	37	.439					
	B	34	29						
102	A	85	53	10.747	.01	78	63	1.361	
	B	03	13			05	08		
103	A	28	20	.040					
	B	60	46						
104	A	72	45	3.842	.05	73	46	11.691	.01
	B	16	21			10	35		
105	A	64	48	.000					
	B	24	18						
106	A	75	53	.652					
	B	13	13						
107	A	78	54	1.432					
	B	10	12						
108	A	66	46	.535					
	B	22	20						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
109	A	24	17	.044					
	B	64	49						
110	A	61	31	7.832	.01	63	34	12.883	.01
	B	27	35			20	37		
111	A	71	49	.909					
	B	17	17						
112	A	69	45	2.052	.20	62	48	.943	
	B	19	21			21	23		
113	A	27	16	.777					
	B	61	50						
114	A	86	59	4.760	.05	75	65	.065	
	B	02	07			08	06		
115	A	56	39	.330					
	B	32	27						
116	A	37	27	.020					
	B	51	39						
117	A	36	33	1.260					
	B	52	33						
118	A	80	53	3.602	.10	72	56	1.691	
	B	08	13			11	15		
119	A	84	54	7.533	.01	80	59	7.684	.01
	B	04	12			03	12		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
120	A	45	33	.019					
	B	43	33						
121	A	23	27	3.754	.10	16	36	16.899	.01
	B	65	39			67	35		
122	A	35	26	.002					
	B	53	40						
123	A	31	33	3.389	.10	32	35	1.796	
	B	57	33			51	36		
124	A	70	54	.124					
	B	18	12						
125	A	71	35	13.441	.01	70	52	2.863	.10
	B	17	31			13	19		
126	A	70	51	.116					
	B	18	15						
127	A	66	53	.604					
	B	22	13						
128	A	76	47	5.385	.05	69	55	.784	
	B	12	19			14	16		
129	A	55	34	1.866	.20	58	38	4.362	.05
	B	33	32			25	33		
130	A	57	41	.115					
	B	31	25						

Table F.9 (Continued)

Generalized Situational Choice Inventory **Male** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
131	A	72	49	1.286					
	B	16	17						
132	A	75	37	16.175	.01	70	43	11.071	.01
	B	13	29			13	28		
133	A	63	39	2.635	.20	54	47	9.298	
	B	25	27			29	24		
134	A	43	27	.963					
	B	45	39						
135	A	47	40	.795					
	B	41	26						
136	A	61	39	1.733	.20	56	36	4.472	.05
	B	27	27			27	35		
137	A	86	59	4.760	.05	77	63	.755	
	B	02	07			06	08		
138	A	68	42	3.436	.10	64	51	.564	
	B	20	24			19	20		
139	A	75	54	.322					
	B	13	12						
140	A	71	48	1.359					
	B	17	18						
141	A	74	39	12.066	.01	67	41	9.644	.01
	B	14	27			16	30		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
142	A	40	25	.877					
	B	48	41						
143	A	64	39	3.166	.10	53	45	.003	
	B	24	27			30	26		
144	A	81	55	2.773	.10	76	61	1.244	
	B	07	11			07	10		
145	A	34	20	1.150					
	B	54	46						
146	A	12	17	3.625	.10	12	12	.174	
	B	76	49			71	59		
147	A	12	13	1.019					
	B	76	53						
148	A	53	36	.499					
	B	35	30						
149	A	49	34	.263					
	B	39	32						
150	A	69	55	.583					
	B	19	11						
151	A	38	24	.729					
	B	50	42						
152	A	56	49	1.956	.20	59	40	3.624	.10
	B	32	17			24	31		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=88)	Under-Achiever (N=66)	Chi Square	p	Over-Achiever (N=83)	Under-Achiever (N=71)	Chi Square	p
153	A	42	29	.218					
	B	46	37						
154	A	40	25	.887					
	B	48	41						
155	A	28	21	.000					
	B	60	45						
156	A	80	53	3.602	.10	63	57	.426	
	B	08	13			20	14		
157	A	84	57	4.033	.05	79	63	2.215	
	B	04	09			04	08		
158	A	48	28	2.217	.20	51	35	2.291	
	B	40	38			32	36		
159	A	65	33	9.281	.01	56	49	.042	
	B	23	33			27	22		
160	A	79	54	2.026	.20	77	62	1.291	
	B	09	12			06	09		
161	A	80	52	4.525	.05	76	55	5.989	.05
	B	08	14			07	16		
162	A	51	39	.020					
	B	37	27						
163	A	43	43	4.058	.05	33	35	1.411	
	B	45	23			50	36		

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
164	A	17	25	6.550	.01	17	18	.517	
	B	71	41			66	53		
165	A	53	39	.020					
	B	35	27						
166	A	63	42	1.100					
	B	25	24						
167	A	60	35	3.663	.10	62	40	5.768	.05
	B	28	31			21	31		
168	A	48	29	1.697	.20	44	41	.347	
	B	40	37			39	30		
169	A	58	35	2.615	.20	58	41	2.454	
	B	30	31			25	30		
170	A	75	42	9.632	.01	73	50	7.313	.01
	B	13	24			10	21		
171	A	81	51	6.722	.01	78	59	4.610	.05
	B	07	15			15	12		
172	A	44	31	.139					
	B	44	35						
173	A	46	29	1.048					
	B	42	37						
174	A	43	38	1.148					
	B	45	28						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
175	A	81	44	15.892	.01	77	56	6.276	.05
	B	07	22			06	15		
176	A	19	17	.366					
	B	69	49						
177	A	59	34	3.803	.05	53	39	1.268	
	B	29	32			30	32		
178	A	51	27	4.384	.05	57	35	5.975	.05
	B	37	39			26	36		
179	A	81	52	5.629	.05	77	55	7.322	.05
	B	07	14			06	16		
180	A	80	47	10.120	.01	73	59	.736	
	B	08	19			10	12		
181	A	72	43	5.540	.05	63	51	.330	
	B	16	23			20	20		
182	A	72	51	.485					
	B	16	15						
183	A	75	36	17.641	.01	67	51	1.689	
	B	13	30			16	20		
184	A	54	39	.081					
	B	34	27						
185	A	27	23	.299					
	B	61	43						

Table F.9 (Continued)

Generalized Situational Choice Inventory **Male** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	P	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	P
186	A	69	44	2.662	.10	65	57	.090	
	B	19	22			18	14		
187	A	07	09	1.308					
	B	81	57						
188	A	76	47	5.385	.05	57	49	1.524	
	B	12	19			16	22		
189	A	75	47	4.500	.05	76	56	5.035	.05
	B	13	19			07	15		
190	A	67	38	5.989	.05	61	43	2.918	.10
	B	21	28			22	28		
191	A	63	35	5.615	.05	62	48	.943	
	B	25	31			21	23		
192	A	59	28	9.302	.01	62	38	7.537	.01
	B	29	38			21	33		
193	A	79	51	4.479	.05	76	55	5.989	.05
	B	09	15			07	16		
194	A	21	12	.723					
	B	67	54						
195	A	42	35	.424					
	B	46	31						
196	A	12	10	.070					
	B	76	56						

Table F.9 (Continued)

Generalized Situational Choice Inventory Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=88)	Validation Under-Achiever (N=66)	Chi Square	p	Cross-Validation Over-Achiever (N=83)	Cross-Validation Under-Achiever (N=71)	Chi Square	p
197	A	28	21	.000					
	B	60	45						
198	A	69	50	.151					
	B	19	16						
199	A	68	48	3.925	.05	65	56	.007	
	B	20	28			18	15		
200	A	64	38	3.871	.05	61	52	.001	
	B	24	28			22	19		

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Table F.10

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = N-Achievement
B = Non N-Achievement

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
1	A	61	52	.507					
	B	34	36						
2	A	91	78	3.309	.10	89	81	.035	
	B	04	10			05	04		
3	A	48	41	.283					
	B	47	47						
4	A	31	31	.137					
	B	64	57						
5	A	45	36	.773					
	B	50	52						
6	A	77	75	.566					
	B	18	13						
7	A	39	30	.943					
	B	56	58						
8	A	22	29	2.181	.20	14	20	2.164	
	B	73	59			80	65		
9	A	89	81	.186					
	B	06	07						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
10	A	06	14	4.319	.05	10	15	1.825	
	B	89	74			84	70		
11	A	59	50	.530					
	B	36	38						
12	A	81	64	4.363	.05	84	63	7.065	.01
	B	14	24			10	22		
13	A	39	46	2.312	.20	45	38	.180	
	B	56	42			49	47		
14	A	44	40	.014					
	B	51	48						
15	A	18	18	.066					
	B	77	70						
16	A	22	17	.046					
	B	73	61						
17	A	87	80	.026					
	B	08	08						
18	A	51	31	6.293	.05	41	33	.423	
	B	44	57			53	52		
19	A	28	29	.258					
	B	67	59						
20	A	88	82	.021					
	B	07	06						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	P	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	P
21	A	43	23	7.248	.01	30	32	.648	
	B	52	65			64	53		
22	A	62	61	.341					
	B	33	27						
23	A	57	53	.001					
	B	38	35						
24	A	76	46	15.805	.01	76	56	5.165	.05
	B	19	42			18	29		
25	A	37	37	.182					
	B	58	51						
26	A	70	40	15.183	.01	55	38	3.408	.10
	B	25	48			39	47		
27	A	72	68	.056					
	B	23	20						
28	A	26	22	.132					
	B	69	66						
29	A	69	44	9.906	.01	72	54	3.656	.10
	B	26	44			22	31		
30	A	43	39	.016					
	B	52	49						
31	A	61	43	4.386	.05	63	49	1.673	
	B	34	45			31	36		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
32	A	50	47	.011					
	B	45	41						
33	A	81	59	8.434	.01	79	53	10.845	.01
	B	14	29			15	32		
34	A	25	26	.237					
	B	70	62						
35	A	83	79	.260					
	B	12	09						
36	A	45	37	.523					
	B	50	51						
37	A	62	41	6.473	.05	57	34	7.607	.01
	B	33	47			37	51		
38	A	12	08	.588					
	B	83	80						
39	A	27	27	.112					
	B	68	61						
40	A	27	23	.120					
	B	68	65						
41	A	70	54	3.174	.05	75	49	10.280	.01
	B	25	34			19	36		
42	A	84	82	1.229					
	B	11	06						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	P	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	P
43	A	58	51	.182					
	B	37	37						
44	A	85	61	9.951	.01	87	61	13.472	.01
	B	10	25			07	24		
45	A	58	40	4.468	.05	63	39	8.137	.01
	B	37	48			31	46		
46	A	21	18	.074					
	B	74	70						
47	A	46	28	5.228	.05	40	32	.447	
	B	49	60			54	53		
48	A	27	24	.030					
	B	68	64						
49	A	71	61	.667					
	B	24	27						
50	A	88	79	.468					
	B	07	09						
51	A	90	75	4.659	.05	82	73	.070	
	B	05	13			12	12		
52	A	72	44	13.092	.01	71	50	5.689	.05
	B	23	44			23	35		
53	A	90	67	12.967	.01	84	71	1.308	
	B	05	21			10	14		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
54	A	65	59	.040					
	B	30	29						
55	A	86	80	.008					
	B	09	08						
56	A	84	65	6.400	.05	81	67	1.682	
	B	11	23			13	18		
57	A	38	27	1.732	.10	46	22	10.071	.01
	B	57	61			48	63		
58	A	82	66	3.782	.05	82	65	3.522	.10
	B	13	22			12	20		
59	A	55	45	.842					
	B	40	43						
60	A	63	54	.486					
	B	32	34						
61	A	46	31	3.263	.10	43	27	3.663	.10
	B	49	57			51	58		
62	A	89	82	.019					
	B	06	06						
63	A	65	45	5.692	.05	62	52	.441	
	B	30	43			32	33		
64	A	42	32	1.168					
	B	53	56						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	P	Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	P
65	A	90	69	10.688	.01	84	70	.825	
	B	05	19			10	15		
66	A	13	14	.180					
	B	82	74						
67	A	79	64	2.910	.10	64	66	2.053	
	B	16	24			30	19		
68	A	67	53	2.146	.20	70	51	4.266	.05
	B	28	35			24	34		
69	A	57	50	.190					
	B	38	38						
70	A	68	53	2.628	.20	72	48	8.182	.01
	B	27	35			22	37		
71	A	44	36	.543					
	B	51	52						
72	A	37	25	2.265	.20	35	26	.878	
	B	58	63			59	59		
73	A	75	65	.657					
	B	20	23						
74	A	89	76	2.760	.10	86	72	1.983	
	B	06	12			08	13		
75	A	38	38	.190					
	B	57	50						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	P	Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	P
76	A	85	80	.106					
	B	10	08						
77	A	88	75	2.573	.20	88	74	2.234	
	B	07	13			06	11		
78	A	61	61	.536					
	B	34	27						
79	A	81	77	.194					
	B	14	11						
80	A	54	44	.860					
	B	41	44						
81	A	53	38	2.905	.10	52	44	.227	
	B	42	50			42	41		
82	A	71	65	.018					
	B	24	23						
83	A	94	80	6.312	.05	90	78	1.226	
	B	01	08			04	07		
84	A	08	06	.166					
	B	87	82						
85	A	36	44	2.721	.10	47	40	.155	
	B	59	44			47	45		
86	A	88	66	10.649	.01	88	75	1.588	
	B	07	22			06	10		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
87	A	64	57	.137					
	B	31	31						
88	A	93	76	8.598	.01	92	78	3.487	
	B	02	12			02	07		
89	A	69	67	.294					
	B	26	21						
90	A	81	74	.048					
	B	14	14						
91	A	80	66	2.403	.20	77	68	.106	
	B	15	22			17	17		
92	A	08	09	.177					
	B	87	79						
93	A	42	43	.398					
	B	53	45						
94	A	80	55	11.128	.01	83	66	3.630	.10
	B	15	33			11	19		
95	A	91	74	7.050	.01	84	75	.057	
	B	04	14			10	10		
96	A	53	32	6.931	.01	49	36	1.710	
	B	42	56			45	49		
97	A	59	52	.174					
	B	36	36						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
98	A	64	66	1.293					
	B	31	22						
99	A	42	32	1.168					
	B	53	56						
100	A	48	34	2.611	.10	44	37	.194	
	B	47	54			50	48		
101	A	60	44	3.224	.10	68	36	16.489	.01
	B	35	44			26	49		
102	A	91	80	1.776	.20	89	80	.027	
	B	04	08			05	05		
103	A	31	22	1.293					
	B	64	66						
104	A	84	65	6.400	.05	86	66	6.677	.01
	B	11	23			08	19		
105	A	81	69	1.452					
	B	14	19						
106	A	85	63	9.445	.01	85	75	.226	
	B	10	25			09	10		
107	A	87	74	2.422	.20	87	77	.224	
	B	08	14			07	08		
108	A	81	69	1.452					
	B	14	19						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
109	A	37	28	1.014					
	B	58	60						
110	A	79	71	.189					
	B	16	17						
111	A	80	66	2.402	.20	85	69	3.178	.10
	B	15	22			09	16		
112	A	60	67	3.623	.10	57	71	11.480	
	B	35	21			37	14		
113	A	09	15	2.299	.20	15	10	.653	
	B	86	73			79	75		
114	A	93	79	5.334	.05	87	77	.224	
	B	02	09			07	08		
115	A	77	61	3.392	.10	64	53	.648	
	B	18	27			30	32		
116	A	54	56	.879					
	B	41	32						
117	A	58	63	2.265	.20	60	62	1.707	
	B	37	25			34	23		
118	A	85	71	2.808	.10	90	75	3.491	.10
	B	10	17			04	10		
119	A	93	76	8.598	.01	86	79	.131	
	B	02	12			08	06		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation oOver-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
120	A	57	51	.079					
	B	38	37						
121	A	14	30	9.370	.01	14	17	.813	
	B	81	58			80	68		
122	A	09	12	.779					
	B	86	76						
123	A	28	31	.692					
	B	67	57						
124	A	44	53	3.549	.10	46	51	2.201	
	B	51	35			48	34		
125	A	75	64	.968					
	B	20	24						
126	A	87	72	3.820	.05	84	74	.229	
	B	08	16			10	11		
127	A	44	45	.425					
	B	51	43						
128	A	69	57	1.316					
	B	26	31						
129	A	69	46	8.109	.01	62	43	4.348	.05
	B	26	42			32	42		
130	A	71	61	.667					
	B	24	27						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Cross-Validation Chi Square	Cross-Validation p
131	A	78	57	7.093	.01	71	46	9.041	.01
	B	17	31			23	39		
132	A	70	47	8.144	.01	67	37	14.117	.01
	B	25	41			27	48		
133	A	75	65	.657					
	B	20	23						
134	A	36	26	1.422					
	B	59	62						
135	A	32	45	5.709	.05	41	38	.021	
	B	63	43			53	47		
136	A	43	41	.032					
	B	52	47						
137	A	89	84	.277					
	B	06	04						
138	A	76	68	.203					
	B	19	20						
139	A	93	78	6.391	.05	89	75	2.415	
	B	02	10			05	10		
140	A	84	61	10.132	.01	79	64	2.126	
	B	11	27			15	21		
141	A	73	45	13.180	.01	69	41	11.937	.01
	B	22	43			25	44		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
142	A	30	28	.001					
	B	65	60						
143	A	39	43	1.127					
	B	56	45						
144	A	90	73	6.515	.05	88	76	1.028	
	B	05	15			06	09		
145	A	40	28	2.070	.20	44	29	2.977	.10
	B	55	60			50	56		
146	A	09	24	9.791	.01	13	23	4.862	
	B	86	64			81	62		
147	A	20	17	.085					
	B	75	71						
148	A	70	53	3.754	.10	62	59	.243	
	B	25	35			32	26		
149	A	34	39	1.386					
	B	61	49						
150	A	78	65	1.817	.20	72	59	1.174	
	B	17	23			22	26		
151	A	49	46	.009					
	B	46	42						
152	A	78	62	3.450	.10	69	62	.005	
	B	17	26			25	23		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Cross-Validation Chi Square	Cross-Validation p
153	A	14	21	2.460	.20	15	17	.497	
	B	81	67			79	68		
154	A	24	25	.231					
	B	71	63						
155	A	39	22	5.297	.05	40	27	2,218	
	B	56	66			54	58		
156	A	78	66	1.375					
	B	17	22						
157	A	90	83	.016					
	B	05	05						
158	A	47	38	.727					
	B	48	50						
159	A	71	48	8.190	.01	58	47	.756	
	B	24	40			36	38		
160	A	87	76	1.276					
	B	08	12						
161	A	71	72	1.341					
	B	24	16						
162	A	56	46	.825					
	B	39	42						
163	A	21	24	.658					
	B	74	64						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
164	A	15	14	.000					
	B	80	74						
165	A	51	37	2.479	.20	43	42	.241	
	B	44	51			51	43		
166	A	70	55	2.640	.20	69	61	.060	
	B	25	33			25	24		
167	A	68	48	5.711	.05	62	37	9.084	.01
	B	27	40			32	48		
168	A	29	34	1.331					
	B	66	54						
169	A	43	36	.353					
	B	52	52						
170	A	88	77	1.356					
	B	07	11						
171	A	90	79	1.593					
	B	05	09						
172	A	48	36	1.702	.20	51	44	.111	
	B	47	52			43	41		
173	A	57	50	.190					
	B	38	38						
174	A	27	39	5.007	.05	30	41	4.968	
	B	68	49			64	44		

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Cross-Validation Under-Achiever (N=85)	Chi Square	p
175	A	83	65	5.386	.05	83	60	8.713	.01
	B	12	23			11	25		
176	A	08	16	3.820	.05	08	13	1.983	
	B	87	72			86	72		
177	A	57	52	.016					
	B	38	36						
178	A	57	51	.079					
	B	38	37						
179	A	91	80	1.776	.20	86	79	.131	
	B	04	08			08	06		
180	A	81	73	.183					
	B	14	15						
181	A	67	43	8.941	.01	66	52	1.622	
	B	28	45			28	33		
182	A	76	68	.203					
	B	19	20						
183	A	83	60	9.846	.01	77	52	9.537	.01
	B	12	28			17	33		
184	A	75	63	1.333					
	B	20	25						
185	A	19	19	.070					
	B	76	69						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation				Cross-Validation			
		Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
186	A	75	61	2.219	.20	78	73	.285	
	B	20	27			16	12		
187	A	03	07	2.035	.20	11	05	1.857	
	B	92	81			83	80		
188	A	77	62	2.810	.10	69	63	.012	
	B	18	26			25	22		
189	A	89	70	8.014	.01	83	75	.000	
	B	06	18			11	10		
190	A	70	42	12.962	.01	72	42	14.263	.01
	B	25	46			22	43		
191	A	67	50	3.723	.10	63	56	.026	
	B	28	38			31	29		
192	A	64	61	.080					
	B	31	27						
193	A	86	68	6.017	.05	85	70	2.505	
	B	09	20			09	15		
194	A	11	14	.726					
	B	84	74						
195	A	56	51	.019					
	B	39	37						
196	A	05	09	1.593					
	B	90	79						

Table F.10 (Continued)

Generalized Situational Choice Inventory Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=88)	Chi Square	p	Cross-Validation Over-Achiever (N=94)	Under-Achiever (N=85)	Chi Square	p
197	A	24	31	2.158	.20	23	23	.157	
	B	71	57			71	62		
198	A	47	50	.989					
	B	48	38						
199	A	51	49	.074					
	B	44	39						
200	A	79	56	8.997	.01	70	51	4.266	.05
	B	16	32			24	34		

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Table F.11

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = N-Achievement
B = Non N-Achievement

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over--Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
1	A	82	53	.022					
	B	13	09						
2	A	65	37	1.260					
	B	30	25						
3	A	67	40	.624					
	B	28	22						
4	A	50	25	2.278	.20	54	35	4.334	.05
	B	45	37			26	34		
5	A	69	38	2.223	.20	62	42	4.861	.05
	B	26	24			18	27		
6	A	70	47	.089					
	B	25	15						
7	A	88	57	.026					
	B	07	05						
8	A	94	57	5.018	.05	78	62		
	B	01	05			02	07		
9	A	79	45	2.528	.20	74	58	2.612	
	B	16	17			06	11		

Table F.11 (Continued)

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=62)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Cross-Validation Chi Square	Cross-Validation p
10	A	83	45	5.448	.05	70	57	.704	
	B	12	17			10	12		
11	A	68	32	6.467	.05	56	45	.388	
	B	27	30			24	24		
12	A	74	35	8.127	.01	64	38	10.661	.01
	B	21	27			16	31		
13	A	60	41	.144					
	B	35	21						
14	A	88	56	.263					
	B	07	06						
15	A	92	59	.288					
	B	03	03						
16	A	85	52	1.059					
	B	10	10						
17	A	84	47	4.320	.05	76	56	7.021	.01
	B	11	15			04	13		
18	A	72	37	4.588	.05	63	47	2.168	
	B	23	25			17	22		
19	A	66	38	1.123					
	B	29	24						
20	A	69	33	6.207	.05	59	47	.573	
	B	26	29			21	22		

Table F.11 (Continued)

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=62)	Chi Square	p	Cross-Validation Over-Achiever (N=80)	Cross-Validation Under-Achiever (N=69)	Chi Square	p
21	A	85	54	.209					
	B	10	08						
22	A	88	48	7.493	.01	72	59	.704	
	B	07	14			08	10		
23	A	79	57	2.495	.20	69	55	1.135	
	B	16	05			11	14		
24	A	79	42	5.045	.05	69	49	5.219	.05
	B	16	20			11	20		
25	A	73	48	.007					
	B	22	14						
26	A	88	44	13.151	.01	68	50	3.534	.10
	B	07	18			12	19		
27	A	62	40	.009					
	B	33	22						
28	A	78	44	2.686	.20	69	52	2.878	.10
	B	17	18			11	17		
29	A	90	53	3.955	.05	74	57	3.413	.10
	B	05	09			06	12		
30	A	82	54	.020					
	B	13	08						
31	A	76	44	1.699	.20	70	52	3.679	.10
	B	19	18			10	17		

Table F.11 (Continued)

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=62)	Chi Square	P	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	P
32	A	87	50	4.035	.05	75	55	6.564	.01
	B	08	12			05	14		
33	A	79	45	2.528	.20	67	51	2.176	
	B	16	17			13	18		
34	A	74	48	.005					
	B	21	14						
35	A	81	50	.579					
	B	14	12						
36	A	88	45	11.647	.01	70	52	3.679	.10
	B	07	17			10	17		
37	A	79	51	.021					
	B	16	11						
38	A	80	48	1.149					
	B	15	14						
39	A	82	49	1.440					
	B	13	13						
40	A	83	51	.784					
	B	12	11						
41	A	71	44	.272					
	B	24	18						
42	A	85	48	4.210	.05	74	57	3.413	.10
	B	10	14			06	12		

Table F.11 (Continued)

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
43	A	88	46	10.200	.01	75	57	4.550	.05
	B	07	16			05	12		
44	A	80	44	3.963	.05	66	43	7.683	.01
	B	15	18			14	26		
45	A	71	46	.006					
	B	24	16						
46	A	83	50	1.310					
	B	12	12						
47	A	78	43	3.451	.10	65	51	1.157	
	B	17	19			15	18		
48	A	81	48	1.575					
	B	14	14						
49	A	86	51	2.307	.20	74	57	3.413	.10
	B	09	11			06	12		
50	A	86	47	6.277	.05	75	56	5.529	.05
	B	09	15			05	13		
51	A	78	47	.917					
	B	17	15						
52	A	69	40	1.164					
	B	26	22						
53	A	83	47	3.522	.10	74	47	14.434	.01
	B	12	15			06	22		

Table F.11 (Continued)

Preferred Job Characteristics Scale Male Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=62)	Chi Square	p	Over-Achiever (N=80)	Under-Achiever (N=69)	Chi Square	p
54	A	80	48	1.149					
	B	15	14						
55	A	82	47	2.828	.10	72	55	3.117	.10
	B	13	15			08	14		
56	A	76	48	.151					
	B	19	14						
57	A	90	51	6.383	.05	75	57	4.550	.05
	B	05	11			05	12		
58	A	80	49	.686					
	B	15	13						
59	A	69	40	1.164					
	B	26	22						
60	A	77	39	6.405	.05	63	48	1.645	
	B	18	23			17	21		
61	A	71	44	.272					
	B	24	18						
62	A	84	49	2.554	.20	72	47	11.033	.01
	B	11	13			08	22		
63	A	72	50	.511					
	B	23	12						
64	A	85	55	.023					
	B	10	07						

Table F.12

Preferred Job Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Legend: A = N-Achievement
B = Non N-Achievement

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=90)	Chi Square	p	Over-Achiever (N=91)	Under-Achiever (N=87)	Chi Square	p
1	A	89	79	1.932	.20	89	33	73.938	.01
	B	06	11			02	54		
2	A	79	60	6.728	.01	67	65	.027	
	B	16	30			24	22		
3	A	76	67	.813					
	B	19	23						
4	A	62	50	1.823	.20	64	52	2.185	
	B	33	40			27	35		
5	A	67	47	6.547	.05	66	47	6.570	.01
	B	28	43			25	40		
6	A	81	70	1.726	.20	80	67	3.675	.10
	B	14	20			11	20		
7	A	90	72	9.219	.01	90	80		
	B	05	18			01	07		
8	A	89	81	.842					
	B	06	09						
9	A	80	66	3.287	.10	81	72	1.440	
	B	15	24			10	15		

Table F.12 (Continued)

Preferred Job Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=90)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=87)	Cross-Validation Chi Square	Cross-Validation p
10	A	86	66	9.321	.01	86	63	15.917	.01
	B	09	24			05	24		
11	A	83	61	10.282	.01	78	63	4.779	.05
	B	12	29			13	24		
12	A	68	44	9.960	.01	59	38	8.028	.01
	B	27	46			32	49		
13	A	69	55	2.775	.10	74	52	9.987	.01
	B	26	35			17	35		
14	A	92	73	11.861	.01	87	81	.525	
	B	03	17			04	06		
15	A	91	80	3.146	.10	87	75	4.801	.05
	B	04	10			04	12		
16	A	87	74	3.584	.10	84	69	6.224	.05
	B	08	16			07	18		
17	A	90	76	5.313	.05	88	80	1.892	
	B	05	14			03	07		
18	A	77	66	1.569					
	B	18	24						
19	A	75	60	3.534	.10	73	45	16.162	.01
	B	20	30			18	42		
20	A	70	60	1.089					
	B	25	30						

Table F.12 (Continued)

Preferred Job Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=90)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=87)	Cross-Validation Chi Square	Cross-Validation p
21	A	85	69	5.434	.05	83	71	3.514	.10
	B	10	21			08	16		
22	A	87	75	2.886	.10	85	77	1.306	
	B	08	15			06	10		
23	A	90	73	8.189	.01	87	70	9.803	.01
	B	05	17			04	17		
24	A	86	73	3.392	.10	74	71	.002	
	B	09	17			17	16		
25	A	85	77	.651					
	B	10	13						
26	A	78	63	3.736	.10	77	50	16.031	.01
	B	17	27			14	37		
27	A	83	67	5.032	.05	77	64	3.300	.10
	B	12	23			14	23		
28	A	80	60	7.728	.01	77	68	1.227	
	B	15	30			14	19		
29	A	80	76	.002					
	B	15	14						
30	A	89	70	9.681	.01	81	65	6.167	.05
	B	06	20			10	22		
31	A	84	68	5.220	.05	81	69	3.157	.10
	B	11	22			10	18		

Table F.12 (Continued)

Preferred Job Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Validation Under-Achiever (N=90)	Validation Chi Square	Validation p	Cross-Validation Over-Achiever (N=91)	Cross-Validation Under-Achiever (N=87)	Cross-Validation Chi Square	Cross-Validation p
32	A	89	78	2.591	.20	88	72	9.515	.01
	B	06	12			03	15		
33	A	84	67	6.018	.05	77	59	6.963	.01
	B	11	23			14	28		
34	A	77	67	1.170					
	B	18	23						
35	A	86	77	1.090					
	B	09	13						
36	A	75	66	.804					
	B	20	24						
37	A	78	69	.838					
	B	17	21						
38	A	83	66	5.809	.05	78	70	.876	
	B	12	24			13	17		
39	A	90	77	4.436	.05	87	74	5.727	.05
	B	05	13			04	13		
40	A	85	71	3.917	.05	86	70	8.101	.01
	B	10	19			05	17		
41	A	82	76	.130					
	B	13	14						
42	A	87	72	5.130	.05	79	71	.909	
	B	08	18			12	16		

Table F.12 (Continued)

Preferred Job Characteristics Scale **Female** Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

Item	Response	Validation Over-Achiever (N=95)	Under-Achiever (N=90)	Chi Square	p	Cross-Validation Over-Achiever (N=91)	Under-Achiever (N=87)	Chi Square	p
43	A	85	71	3.917	.05	81	71	1.954	
	B	10	19			10	16		
44	A	75	59	3.301	.10	73	56	5.602	.05
	B	20	29			18	31		
45	A	67	56	1.430					
	B	28	34						
46	A	88	68	10.195	.01	90	76	9.429	.01
	B	07	22			01	11		
47	A	84	73	1.923	.20	80	70	1.863	
	B	11	17			11	17		
48	A	84	71	3.091	.10	83	66	7.681	.01
	B	11	19			08	21		
49	A	89	79	1.932	.20	86	74	4.368	.05
	B	06	11			05	13		
50	A	82	75	.320					
	B	13	15						
51	A	84	66	6.858	.01	82	66	6.443	.05
	B	11	24			09	21		
52	A	66	54	1.820	.20	71	56	4.056	.05
	B	29	36			20	31		
53	A	81	68	2.779	.10	88	66	16.561	.01
	B	14	22			03	21		

Table F.12 (Continued)

Preferred Job Characteristics Scale Female Response Frequencies and Chi Square Values for Validation and Cross-Validation Samples of Under- and Over-Achievers

		Validation				Cross-Validation			
Item	Response	Over-Achiever (N=95)	Under-Achiever (N=90)	Chi Square	p	Over-Achiever (N=91)	Under-Achiever (N=87)	Chi Square	p
54	A	81	70	1.726	.20	81	66	5.347	.05
	B	14	20			10	21		
55	A	86	68	7.426	.01	81	58	12.979	.01
	B	09	22			10	29		
56	A	87	78	1.157					
	B	08	12						
57	A	85	78	.348					
	B	10	12						
58	A	81	61	7.920	.01	77	63	3.945	.05
	B	14	29			14	24		
59	A	80	55	12.504	.01	79	64	4.943	.05
	B	15	35			12	23		
60	A	79	64	3.822	.10	80	59	10.498	
	B	16	26			11	28		
61	A	70	64	.153					
	B	25	26						
62	A	82	67	4.156	.05	82	64	8.258	.01
	B	13	23			09	23		
63	A	88	74	4.560	.05	78	64	4.070	.05
	B	07	16			13	23		
64	A	91	82	1.668	.20	88	81		
	B	04	08			03	06		

APPENDIX C

CORRELATION MATRICES AND UNROTATED FACTORS

PRECEDING PAGE BLANK-NOT FILMED

Table G.1

Item Intercorrelations of Forty-Eight Items Used In Factor Analysis of Word Rating List*

(Males N = 100)

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1	....																																															
2	.144	....																																														
3	.054	.159	....																																													
4	.228	.216	.049	....																																												
5	-.021	.243	.240	.268	....																																											
6	.199	.415	.240	.435	.369	....																																										
7	.203	.505	.118	.221	.203	.360	....																																									
8	-.049	.569	.161	.274	.376	.376	.565	....																																								
9	.317	.192	.015	.288	.212	.212	.236	.274	....																																							
10	.184	.341	.145	.404	.382	.548	.437	.426	.469	....																																						
11	.096	.265	.191	.335	.439	.351	.315	.432	.334	.553	....																																					
12	.199	.415	.057	.268	.285	.434	.532	.334	.257	.424	.351	....																																				
13	.051	.206	.399	.033	.154	.154	.293	.302	.142	.172	.179	.210	....																																			
14	.213	.397	.232	.213	.233	.397	.507	.478	.325	.477	.365	.315	.354	....																																		
15	-.038	-.085	.093	.030	.041	.192	-.066	.069	-.005	.147	.132	-.010	.043	.203	....																																	
16	.034	.284	.015	.333	.347	.528	.148	.363	.126	.380	.334	.393	.202	.237	.049	....																																
17	-.038	.454	.141	.224	.166	.333	.291	.406	.219	.354	.383	.375	-.024	.255	-.069	.264	....																															
18	.155	.288	.330	.281	.340	.212	.191	.307	.347	.316	.398	.084	.261	.337	.023	.209	.159	....																														
19	.274	.476	.258	.304	.279	.237	.341	.436	.286	.464	.382	.491	.231	.357	-.039	.241	.302	.331	....																													
20	-.060	.369	.308	.205	.225	.266	.190	.309	.086	.108	.306	.225	.044	.276	-.022	.264	.386	.291	.264	....																												
21	-.038	.172	.385	-.070	.141	.141	.180	.219	-.005	.098	.132	-.010	.512	.351	.036	.157	-.069	.227	.215	.027	....																											
22	.208	.013	.315	-.030	.146	.209	.156	.005	.171	-.010	.152	.083	.175	.207	.036	-.033	-.005	.236	.099	.099	.187	....																										
23	.170	.355	.113	.335	.356	.315	.306	.356	.237	.396	.409	.315	.190	.318	.006	.325	.296	.296	.357	.195	-.043	.022	....																									
24	.181	.221	.293	.049	.118	.057	.178	.161	.146	.205	.191	.179	.237	.291	.239	.015	.141	.206	.381	.069	.239	.040	.291	....																								
25	.033	.301	.142	.281	.294	.245	.266	.414	.279	.389	.302	.245	.150	.342	.068	.489	.311	.382	.369	.318	.010	-.056	.342	.213	....																							
26	.168	.149	.318	.312	.134	.322	.184	.191	.142	.172	.238	.154	.405	.245	.244	.262	-.024	.241	.231	.208	.177	.342	.245	.237	.150	....																						
27	.079	.426	.194	.208	.276	.193	.393	.307	.117	.256	.238	.276	.134	.360	-.030	.207	.357	.315	.372	.287	.120	.113	.441	.255	.301	.134	....																					
28	.203	.165	.300	.065	.071	.239	.311	.164	.004	.198	.213	.184	.456	.267	.159	.239	-.056	.215	.370	.072	.355	.242	.161	.300	.006	.383	.098	....																				
29	.156	.175	.273	.141	.150	.209	.141	.367	.187	.173	.290	.091	.453	.371	.358	.250	.102	.238	.228	.098	.358	.206	.140	.444	.053	.453	.212	.354	....																			
30	-.011	.234	.117	.009	-.065	.023	.289	.169	.081	.010	.050	.199	.227	.299	.067	-.013	.049	.066	.185	-.017	.278	.077	.127	.372	-.018	.051	.298	.203	.217	....																		
31	.035	.342	.012	.083	.234	.109	.434	.348	.117	.214	.327	.360	.078	.319	-.030	.207	.315	.272	.414	.287	.020	.050	.237	.012	.349	.022	.375	.043	.153	.079	....																	
32	.145	.224	.156	.309	.141	.186	.307	.341	.338	.313	.353	.369	.214	.439	.116	.190	.339	.321	.445	.242	.061	.112	.171	.223	.453	.153	.282	.311	.134	.145	.282	....																
33	.144	.596	.252	.172	.358	.358	.559	.435	.129	.349	.298	.440	.201	.464	.053	.261	.420	.387	.446	.467	.151	.108	.424	.252	.382	.092	.564	.222	.215	.101	.523	.332	....															
34	.199	.372	.118	.310	.201	.369	.368	.417	.212	.306	.351	.496	.154	.397	.091	.347	.416	.297	.406	.389	.041	.020	.397	.362	.489	.210	.360	.239	.268	.023	.360	.415	.481	....														
35	.067	.372	-.004	.226	.243	.201	.409	.459	.297	.424	.351	.412	.098	.438	-.110	.393	.458	.383	.406	.225	.041	-.043	.397	.037	.537	.043	.402	.020	.150	.067	.485	.369	.522	.454	....													
36	.053	.257	.170	.208	.268	.310	.262	.274	.153	.445	.291	.352	.089	.417	.180	.288	.369	.238	.389	.164	.030	.075	.376	.049	.378	.033	.417	.065	.141	.096	.417	.491	.498	.352	.561	....												
37	.156	.159	.224	.196	.217	.258	.164	.176	.224	.298	.178	.258	.236	.298	.291	.180	.190	.280	.134	.137	-.053	.138	.178	.164	.379	.072	.172	.098	.189	.027	.212	.337	.402	.299	.258	.319	....											
38	.241	.453	.009	.369	.266	.431	.512	.472	.308	.554	.437	.431	.208	.477	.076	.352	.427	.410	.431	.273	.126	.037	.518	.308	.413	.154	.451	.179	.388	.155	.451	.376	.628	.678	.596	.451	.338	....										
39	-.005	.356	.161	.191	.125	.251	.321	.380	.050	.385	.233	.376	.135	.193	-.180	.319	.406	.264	.372	.268	-.030	-.058	.356	.161	.414	.024	.349	.056	.074	.038	.349	.341	.435	.501	.501	.315	.176	.513	....									
40	.156	.369	.224	.441	.360	.463	.405	.379	.268	.500	.265	.504	.181	.459	.143	.356	.313	.364	.466	.257	.143	.138	.419	.224	.474	.236	.417	.151	.189	.242	.458	.471	.482	.504	.463	.523	.319	.539	.339	....								
41	.089	.276	.142	-.098	.020	.239	.257	.272	.063	.091	.100	.184	.311	.267	.093	.297	.107	.271	.205	.126	.290	.161	.054	.300	.259	.238	.098	.362	.431	.203	.152	.251	.222	.239	.239	.065	.151	.233	.272	.205	....							
42	.086	.210	.178	.204	.369	.369	.261	.356	.231	.323	.314	.369	.259	.431	-.012	.397	.264	.302	.238	.050	.110	.200	.281	.104	.440	.055	.255	.173	.303	.086	.306	.412	.280	.369	.472	.408	.420	.402	.244	.470	.306	....						
43	.089	.165	.300	.174	.239	.129	.151	.272	.121	.252	.157	.075	.236	.374	.290	.063	-.002	.326	.205	-.035	.355	.242	.107	.300	.069	.311	.152	.150	.588	.203	.098	.014	.168	.129	.129	.065	.151	.233	.002	.258	.150	.240	....					
44	-.006	.142	.192	-.135	-.021	.135	.038	.115	.028	-.060	-.104	.083	.206	.106	.001	.140	-.115	.221	.051	-.079	.188	.292	-.099	.040	.038	.067	-.073	.256	.172	.269	-.073	.039	.006	.031	.031	-.083	.147	.023	.063	-.006	.392	.204	.256	....				
45	-.021	.372	.301	.310	.412	.412	.244	.376	.167	.382	.306	.285	.210	.397	.091	.393	.291	.554	.237	.389	.091	.083	.397	-.004	.489	.210	.318	.075	.150	-.065	.360	.323	.563	.454	.496	.519	.381	.431	.417	.545	.293	.369	.239	.083	....			
46	.097	.318	.090	.218	.186	.232	.307	.295	.092	.268	.304	.161	.335	.394	.116	.190	.067	.228	.214	.107	.280	.318	.216	.223	.188	.457	.145	.370	.326	.288	.055	.157	.198	.278	.141	.082	.070	.287	.114	.203	.251	.245	.311	.152	.106	....		
47	.236	.202	.213	.233	.245	.196	.171	.172	.070	.137	.199	.342	.280	.247	.068	.384	.117	.382	.319	.127	.127	.164	.295	.354	.379	.280	.204	.259	.190	.185	.204	.294	.240	.391	.148	.294	.331	.270	.269	.379	.195	.321	.259	.159	.391	.294	....	
48	.157	.292	.361	.252	.354	.398	.306	.237	.208	.421	.357	.398	.216	.329	.056	.489	.282	.404	.431	.220	.213	.134	.319	.298	.526	.332	.226	.249	.146	.157	.313	.462	.376	.398	.354	.425	.262	.434	.409	.475	.305	.393	.192	.143	.398	.178	.526	....

* All values are + unless otherwise indicated.

Table G.2

Thirteen Unrotated Male Factors for Forty-Eight Items of the Word Rating List Which Had a Sum of Squares in Excess of 1.00

Item	Factors													
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	h²*
1	23	12	-13	42	42	09	19	29	06	07	-21	-21	-28	.75
2	62	-08	39	10	-20	17	-02	05	06	-22	-06	-19	01	.71
3	35	40	-06	-25	-26	-11	42	20	08	-29	05	22	-13	.81
4	45	-16	-41	35	-06	13	05	-03	-11	-03	05	-11	21	.61
5	49	-05	-30	-04	-37	-02	-03	17	-18	-09	25	01	-13	.62
6	59	02	-28	11	-17	33	-17	01	37	-23	13	-11	-10	.83
7	62	-02	42	28	-01	13	-11	20	14	06	08	-01	-05	.74
8	66	-03	19	05	-28	05	-32	-08	-09	-09	-10	12	06	.71
9	40	-04	-22	35	18	-07	-19	33	-19	-20	-31	21	09	.74
10	66	-14	-23	30	-01	02	-20	-02	-05	-14	07	16	-21	.75
11	59	-04	-19	24	-24	01	-05	02	-11	04	-09	31	04	.62
12	61	-17	10	15	21	26	-03	05	24	-12	24	-01	-04	.68
13	40	53	10	-09	-05	09	-04	00	-08	17	08	21	-17	.57
14	67	18	09	11	-02	-23	-22	09	11	06	00	06	10	.64
15	13	30	-34	07	00	-44	-10	-43	41	-04	03	03	03	.78
16	54	-07	-26	-20	-05	44	-18	-27	-04	06	15	-03	-02	.74
17	51	-39	15	03	-14	01	02	-07	12	-30	-17	13	15	.56
18	57	14	-17	-21	-05	-13	11	26	-36	01	-26	-07	-01	.72
19	66	00	22	22	10	07	21	10	-11	01	07	21	-10	.67
20	42	-18	07	-13	-42	10	35	-04	26	-06	-29	07	24	.76
21	26	57	23	-12	-24	-01	-09	04	-17	03	21	23	-17	.68
22	21	43	-11	-04	-03	00	09	56	25	10	-11	-13	19	.70
23	58	-17	-06	20	-08	-01	16	-10	-22	07	11	-22	-06	.57
24	39	37	17	20	22	-23	33	-36	-17	-28	-07	04	-07	.80
25	62	-24	-17	-28	14	01	03	-15	-20	01	-10	11	16	.68
26	38	48	-28	17	-18	20	22	-11	07	26	-10	-07	18	.73
27	55	-14	29	04	-13	-26	21	04	-05	05	12	-20	09	.57
28	37	54	09	07	11	25	13	-05	17	25	05	19	-16	.69
29	43	54	-01	09	-09	-21	-17	-29	01	08	-24	-03	-12	.73
30	24	34	46	12	20	-15	-05	-05	-07	-23	33	-08	41	.80
31	52	-29	25	-12	-01	-18	-01	11	04	33	01	-03	-03	.60
32	58	-07	-03	-05	35	-09	09	06	12	10	-06	44	28	.80
33	71	-18	26	-09	-15	-17	15	07	21	04	-04	-18	-20	.82
34	69	-16	00	04	14	06	11	-26	07	02	-20	-08	-05	.67
35	65	-37	14	-15	07	-09	-24	03	-16	18	-09	-01	-02	.74
36	59	-29	-06	-13	08	-32	-03	05	19	18	28	12	-01	.72
37	45	-01	-28	-22	26	-29	-03	05	27	-15	-09	-07	-10	.61
38	76	-17	09	15	08	-09	-11	-13	-04	08	-14	-18	-15	.76
39	55	-31	21	-22	08	20	13	-16	-12	-05	-12	-03	-10	.62
40	72	-11	-09	00	11	-12	03	04	07	01	27	-10	12	.68
41	40	36	22	-34	19	21	-18	-17	08	02	-29	01	-04	.69
42	59	01	-15	-26	20	-03	-05	13	-03	04	11	03	04	.63
43	35	48	-10	04	-14	-34	-17	01	-21	-14	04	-27	-05	.67
44	13	44	11	-40	22	23	-26	19	02	-30	-09	-20	07	.74
45	65	-16	-22	-39	-20	-07	03	05	01	08	-04	-18	-03	.74
46	42	41	02	18	-12	15	-12	-06	-07	25	-02	-18	36	.66
47	50	19	-19	-18	30	12	32	-09	-19	00	17	-22	09	.69
48	65	04	-17	-21	19	17	23	-02	-10	-09	20	14	00	.69
Sum of Squares	13.30	3.86	2.18	1.97	1.72	1.65	1.55	1.49	1.32	1.24	1.22	1.11	1.04	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.3

Item Intercorrelations of Forty-Eight Items Used in Factor Analysis of Word Rating List*

(Females N = 100)

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1	....																																															
2	.239	....																																														
3	.253	.093	....																																													
4	.263	.322	.097	....																																												
5	.390	.250	.232	.279	....																																											
6	.450	.263	.118	.421	.500	....																																										
7	.267	.244	.098	.283	.276	.362	....																																									
8	-.050	-.082	-.295	.136	.169	.137	.210	....																																								
9	.375	.165	.079	.314	.351	.460	.658	.210	....																																							
10	.086	.139	.073	.175	.055	.087	.061	.093	.027	....																																						
11	.330	.156	.201	.267	.444	.381	.394	.159	.326	.120	....																																					
12	-.066	.050	-.143	.051	.105	.080	.190	.280	.071	-.053	.080	....																																				
13	.014	.021	-.073	.107	.055	.073	-.007	.093	.027	.111	.187	.268	....																																			
14	-.033	.120	-.060	-.183	-.120	-.089	.032	.074	-.060	-.117	-.046	.146	.096	....																																		
15	.222	.270	-.109	.281	.330	.177	.366	.180	.238	.216	.287	.096	.053	-.060	....																																	
16	.263	.228	.044	.403	.371	.380	.183	.280	.401	.267	.360	-.023	.200	-.032	.309	....																																
17	.286	.265	.214	.270	.584	.402	.215	.099	.427	.114	.419	.076	-.020	.075	.334	.461	....																															
18	.059	.212	.239	.136	.117	.188	.166	.025	.064	.263	.108	.165	.263	.136	.220	.170	.096	....																														
19	.190	-.016	.096	.082	-.030	-.071	.082	.188	.063	.204	-.065	.145	.115	.096	.069	.186	-.001	.052	....																													
20	.342	.304	-.053	.177	.261	.265	.286	.070	.232	.226	.237	.176	.161	.054	.361	.282	.255	.173	.294	....																												
21	-.066	-.093	.103	-.131	-.127	-.035	.080	-.065	.024	-.128	.133	.168	.268	.218	-.065	.023	-.106	.222	.025	-.096	....																											
22	.157	.021	.000	.107	.192	.160	.129	.170	.161	.333	.107	.023	.222	-.011	.216	.333	.180	.263	.027	.027	.098	....																										
23	.217	.140	.143	.300	.332	.223	.230	.093	.237	.109	.251	.025	.187	-.027	.307	.328	.268	.033	.067	.257	.131	.031	....																									
24	-.142	.036	.107	.045	.036	.069	.068	.056	.091	-.021	.108	.191	.287	.067	-.129	.062	.039	.213	-.003	-.065	.330	.185	.063	....																								
25	.300	.072	.210	.262	.175	.263	.315	.051	.261	.167	.270	-.090	.000	.016	.095	.250	.281	.051	.160	.262	.023	.083	.304	-.044	....																							
26	.365	.108	.136	.174	.283	.279	.233	.094	.256	.087	.183	.039	.007	-.203	.199	.361	.244	.004	-.106	.108	-.167	.020	.201	-.039	.070	....																						
27	.126	.142	.095	.113	.088	.119	.203	.157	.124	-.048	.197	.327	.159	.194	.073	.228	.099	.104	.149	.012	.420	.228	.091	.227	.072	.191	....																					
28	.302	.301	-.018	.406	.363	.273	.318	.117	.475	.055	.402	-.081	.055	-.094	.301	.288	.377	.064	-.030	.136	-.081	-.014	.332	-.091	.278	.201	.003	....																				
29	.440	.095	.190	.317	.432	.380	.235	.095	.298	.073	.307	.005	.143	-.119	.202	.393	.433	.095	.064	.523	.005	.073	.450	-.027	.327	.354	.185	.342	....																			
30	.135	.286	-.063	.144	.319	.255	.274	.140	.250	-.066	.305	.157	.194	-.013	.279	.206	.249	.365	-.055	.251	.008	.154	.204	.103	.044	.325	.149	.228	.130	....																		
31	.423	.230	.337	.329	.329	.485	.282	.286	.400	.042	.447	.036	.250	-.069	.311	.417	.442	.065	.062	.301	-.013	.111	.457	.021	.250	.331	.186	.314	.509	.250	....																	
32	.415	.191	.283	.366	.294	.308	.256	-.081	.460	.081	.389	-.076	.081	-.219	.176	.365	.295	.051	.115	.389	-.030	.014	.423	-.060	.284	.314	.065	.294	.504	.142	.501	....																
33	-.075	.140	.000	.229	.072	.162	.146	.095	.070	.073	.026	.132	.000	-.188	.099	.175	.127	.039	.086	.211	-.243	.073	.041	-.027	.055	.136	.050	.072	.048	.130	.055	.195	....															
34	.216	.255	.092	.530	.283	.319	.437	.157	.457	.087	.183	.030	.020	-.011	.295	.301	.244	.208	.107	.068	-.031	.220	.295	.146	.220	.277	.191	.366	.398	.281	.372	.395	.179	....														
35	.223	.119	.013	.408	.236	.281	.173	.166	.210	.197	.353	-.069	.197	-.163	.317	.448	.174	.218	.164	.247	-.049	.264	.278	.005	.163	.277	.119	.359	.501	.319	.286	.380	.013	.437	....													
36	.099	-.061	-.160	.152	.099	.203	.156	.286	.206	.175	.118	.108	.105	-.057	.197	.356	.229	.072	.282	.186	.026	.175	.118	.116	.105	.107	.089	.143	.206	.224	.157	.072	.114	.065	.241	....												
37	.182	.212	-.033	.364	.213	.208	.364	.171	.206	.201	.168	.177	.209	.061	.404	.334	.198	.337	.215	.244	-.067	.353	.275	.152	.227	.192	.203	.213	.250	.239	.277	.176	.156	.322	.233	.233	....											
38	.256	.307	.137	.391	.295	.322	.296	.150	.307	.047	.128	.076	.116	.075	.334	.220	.318	.067	.106	.174	-.106	.116	.268	.039	.230	.204	.224	.336	.302	.293	.504	.335	-.004	.525	.337	.061	.285	....										
39	.300	.218	.031	.288	.305	.329	.323	.248	.321	.007	.298	.048	.097	.033	.214	.264	.274	.145	.213	.285	-.088	.210	.246	.120	.366	.215	.133	.353	.209	.264	.307	.279	-.013	.378	.323	.100	.295	.519	....									
40	.331	.103	.103	.370	.430	.333	.288	.074	.327	.130	.463	.163	.130	-.067	.242	.308	.315	.021	.144	.283	-.022	.062	.463	.063	.215	.178	.103	.388	.550	.150	.511	.441	.148	.342	.208	.157	.314	.274	.251	....								
41	.162	.140	.040	.393	.303	.285	.201	.236	.231	.106	.250	.153	.106	.010	.326	.365	.284	.178	.035	.204	-.104	.182	.333	.062	.068	.218	.065	.162	.289	.274	.302	.181	.289	.310	.155	.186	.244	.238	.355	.380	....							
42	.021	.135	-.033	.212	.237	.160	.193	.204	.060	.167	.230	.372	.333	-.016	.261	.200	.070	.395	.106	.141	.090	.250	.222	.200	.000	.281	.290	.185	.327	.286	.219	.172	.164	.381	.346	.157	.422	.220	.264	.297	.445	....						
43	-.032	.044	.138	-.006	-.060	.078	.015	.023	-.025	.154	.042	.016	.366	.136	.053	.030	.033	.172	.278	.183	.209	.058	.092	.206	.130	-.149	.049	-.159	.013	-.004	.183	.051	-.050	-.091	.132	.127	.103	.033	-.015	.027	-.108	.159	....					
44	-.086	.068	.053	.216	.101	.061	.093	.026	.060	.012	.022	.202	.012	.001	-.006	.035	.016	.115	.323	-.003	-.034	-.105	.095	.099	-.017	.124	.121	.246	.206	.107	.090	-.016	-.023	.194	.306	.282	.243	.226	.262	.180	.132	.280	.075	....				
45	.254	.262	.178	.304	.345	.304	.276	.177	.352	.060	.294	.101	.136	.030	.427	.327	.360	.021	-.098	.230	-.129	.000	.411	.013	.153	.417	.178	.303	.356	.333	.527	.323	.178	.458	.232	.086	.291	.483	.224	.444	.447	.357	.024	.029	....			
46	.248	.227	.227	.186	.167	.229	.129	-.044	.209	.366	.185	-.039	.192	-.055	.170	.256	.266	.427	.169	.140	.273	.423	.108	.713	.231	.058	.227	.071	.176	.140	.241	.257	-.025	.197	.270	.157	.212	.035	.012	.083	.026	.115	.366	.061	.047	....		
47	.120	.230	.099	.425	.330	.300	.260	.099	.163	.293	.382	.303	.135	-.116	.435	.309	.229	.220	.195	.361	-.011	.135	.251	.018	.134	.247	.172	.232	.306	.122	.311	.321	.234	.390	.366	.247	.302	.277	.262	.380	.380	.440	.190	.243	.378	.233	....	
48	.122	.136	.093	.211	.198	.231	.164	.230	.053	.218	.140	-.005	.073	.119	.161	.131	.267	.295	.110	.009	.083	.218	.164	.094	.164	.083	.086	.153	.190	.111	.173	.159	-.048	.214	.075	.114	.222	.092	.280	.121	.209	.218	.113	.099	.089	.378	.264	....

*All values are + unless otherwise indicated.

Table G.4

Fifteen Unrotated Female Factors for Forty-Eight Items of the Word Rating List Which Had a Sum of Squares in Excess of 1.00

Item	Factors														
Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	h^2*
1	52	-30	34	05	-11	15	-11	00	03	11	23	17	-22	22	06	.72
2	41	00	01	05	-36	-02	17	49	04	15	12	-07	00	-13	25	.69
3	19	-19	56	-16	13	-20	21	20	07	-26	20	15	07	-08	-10	.71
4	61	-07	-14	16	06	-06	30	01	13	-12	-14	-09	14	-03	27	.68
5	63	-22	05	-10	-12	-08	-13	-02	-24	-15	27	-15	-04	07	-16	.70
6	62	-18	08	-10	-16	-04	-09	-08	10	-08	21	-14	18	07	04	.59
7	53	-01	-09	-19	-30	24	07	-03	41	-03	-18	-12	-14	-07	-29	.81
8	28	22	-38	02	-11	30	-28	-27	-18	-17	-16	12	14	-12	-14	.69
9	60	-20	03	-16	-21	26	-05	-21	35	04	-09	-07	13	-11	-06	.75
10	26	25	15	61	-08	-13	01	04	-04	-12	-13	12	-11	-04	-05	.61
11	61	-08	18	-19	03	-04	-17	-12	-10	02	-13	-24	-14	08	-17	.64
12	17	42	-37	-33	12	05	-28	11	20	-14	20	-06	-16	08	-13	.70
13	24	48	10	-13	22	-19	-23	01	-12	31	-16	-02	21	15	09	.65
14	-06	30	05	-33	-18	39	-07	37	-26	-02	-04	11	-13	-05	31	.72
15	54	06	-22	21	-23	-01	-17	14	-12	14	-22	05	-22	-26	-22	.73
16	64	04	07	17	-06	-03	-22	-28	-03	07	04	15	06	-06	38	.75
17	59	-19	17	-04	-23	05	-21	-01	-18	-20	24	-09	02	-20	14	.72
18	31	53	09	06	-30	-19	19	14	-03	14	09	-25	-10	18	01	.71
19	18	33	06	33	36	52	-03	08	10	-05	20	20	-02	08	05	.77
20	45	03	02	28	01	19	-40	39	19	23	10	-09	02	24	-03	.80
21	-02	47	37	-48	07	02	-04	-11	16	01	-20	-13	-22	-05	09	.75
22	31	39	14	16	-36	-15	-02	-37	-09	-09	-10	29	06	22	-02	.74
23	55	-09	09	-09	27	-02	-10	09	-15	00	-34	-09	-06	01	11	.58
24	11	47	12	-37	00	-10	10	-12	09	-12	03	-12	43	06	05	.65
25	40	-12	33	12	00	34	03	02	13	-14	-21	01	-03	18	01	.53
26	45	-22	-13	-07	04	-32	02	-14	07	19	30	29	-19	-04	-10	.66
27	29	37	06	-44	03	04	00	-09	20	-04	10	39	-29	-09	15	.75
28	55	-28	-11	00	-04	18	22	-09	-08	12	-16	-36	-11	-08	23	.73
29	64	-19	16	-07	34	-09	01	-21	-14	-02	-02	-03	-24	03	06	.73
30	46	11	-21	-18	-27	-13	-04	-03	-05	41	23	-14	06	01	-01	.64
31	69	-18	19	-15	17	-04	-17	08	-16	02	03	14	20	-13	-06	.75
32	60	-29	26	07	21	-06	-02	03	25	09	-09	02	04	13	-04	.66
33	22	-02	-31	18	-02	-30	-18	12	50	-26	02	-03	15	03	21	.70
34	63	-03	-17	-09	-03	-01	43	-04	16	-03	-19	19	09	-04	04	.73
35	57	08	-01	23	20	-04	23	-29	-08	43	-03	01	00	00	-01	.75
36	33	26	-15	23	13	21	-25	-38	06	-03	25	-15	04	-29	11	.70
37	54	31	-16	16	-08	03	10	11	03	-02	-07	12	-08	09	06	.51
38	59	-12	-11	-19	01	22	25	16	-10	16	-06	28	23	-07	-09	.73
39	55	-03	-13	-06	-08	37	23	01	-16	-03	10	07	18	40	-16	.79
40	61	-14	-02	-06	35	-03	-15	08	-06	-20	-12	-15	-10	12	09	.67
41	53	03	-34	-01	00	-20	-10	09	-16	-31	-01	01	07	16	14	.63
42	50	43	-32	-08	19	-29	13	05	-07	00	-02	02	-11	17	-11	.74
43	11	45	39	12	24	08	-13	25	-01	13	-04	-05	32	-25	-21	.76
44	24	20	-25	01	43	22	46	-04	-05	-01	38	-19	-05	-15	00	.82
45	62	-18	-19	-20	04	-20	-11	25	-09	03	-12	24	07	-26	-02	.77
46	37	38	56	20	-18	-13	12	-08	10	-01	07	-04	-02	-18	-02	.76
47	59	17	-12	22	19	-17	05	21	10	-15	00	-08	-12	-14	-21	.67
48	34	25	17	09	-21	04	21	01	-32	-40	01	-10	-09	-04	-11	.60
Σx^2	10.65	3.25	2.44	2.10	1.86	1.76	1.68	1.58	1.37	1.33	1.28	1.20	1.11	1.03	1.00	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.5

Item Intercorrelations of Thirty-Two Items Used In Factor Analysis of Human Trait Inventory*

(Males N = 150)

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	....																															
2	-.020	....																														
3	.169	.051	....																													
4	.087	.201	.116	....																												
5	-.094	.063	-.297	-.089	....																											
6	-.062	.294	.140	.325	.058	....																										
7	-.114	.041	-.079	.099	-.042	.163	....																									
8	.003	.074	.207	.153	-.170	.136	.040	....																								
9	.159	.044	.240	.183	-.248	.099	.071	.451	....																							
10	-.020	.305	.177	.428	.063	.294	.207	.315	.196	....																						
11	-.202	.247	-.097	.180	.202	.341	.252	.081	.013	.352	....																					
12	-.122	.068	.085	.201	-.281	.110	.101	.183	.309	.099	-.007	....																				
13	.016	.234	.128	.349	-.115	.255	.107	.368	.216	.344	.244	.133	....																			
14	.064	.089	.139	.219	-.024	.403	.008	.080	.096	.188	.095	.036	.180	....																		
15	-.019	.166	.082	.331	-.061	.258	.240	.266	.120	.305	.212	.131	.344	.336	....																	
16	-.050	.166	-.034	.305	.053	.198	.075	.080	.124	.227	.182	.300	.268	.103	.257	....																
17	.245	-.061	.221	.269	-.168	.188	-.028	.197	.218	.054	-.015	.194	.187	.267	.093	.142	....															
18	-.044	.042	.107	.254	-.156	.059	.059	.118	.109	.250	.208	.250	.170	.058	.250	.232	.177	....														
19	.016	-.035	.222	.229	-.187	.052	.028	.103	.246	.094	.041	.358	.100	.258	.159	.204	.297	.261	....													
20	-.011	.207	.067	.146	-.052	.221	.169	.441	.277	.359	.214	.067	.359	.316	.359	.217	.061	.098	-.001	....												
21	.029	.084	.295	.040	-.169	.280	-.001	.410	.267	.145	.028	.146	.115	.340	.084	.013	.071	-.023	.093	.356	....											
22	.051	-.019	.120	.095	-.210	.136	-.107	.145	.264	.042	.058	.312	.109	.084	.133	.141	.353	.233	.308	.020	.052	....										
23	.136	.026	.338	.018	-.127	.233	-.006	.203	.188	.122	.032	.051	.317	.080	-.021	.038	.358	.118	.058	.231	.157	.188	....									
24	.080	.056	.056	.272	-.023	.329	.038	.093	.147	.234	.209	.034	.152	.260	.270	.215	.198	.086	-.003	.228	.162	.153	.093	....								
25	-.040	.210	.289	.175	-.091	.141	.204	.314	.202	.253	.133	.129	.175	.092	.168	.076	.071	.043	.090	.104	.108	.053	.197	.149	....							
26	.044	.166	-.012	.396	.094	.258	.140	.026	.082	.305	.177	.227	.381	.287	.444	.257	.093	.250	.126	.257	.084	.102	-.021	.127	.084	....						
27	.154	.021	.240	.007	-.198	.076	.018	.275	.343	.021	.000	.132	.160	.070	-.011	.076	.217	.140	.206	.088	.146	.264	.319	-.110	.083	-.011	....					
28	.135	-.185	.240	.056	-.193	.027	-.131	.088	.195	.032	-.111	.145	.049	.064	.125	-.007	.315	.278	.304	-.052	.104	.663	.173	.168	-.056	.094	.176	....				
29	-.054	.197	.210	.127	-.141	.258	.238	.217	.229	.198	.205	.185	.156	.171	.110	.077	.044	.153	.161	.249	.277	-.022	.158	.087	.307	.241	.114	-.063	....			
30	.071	.042	.268	.194	-.139	.067	.033	.070	.163	.137	-.041	.354	.087	-.001	.074	.119	.318	.178	.300	.063	.124	.300	.288	.048	.090	.137	.229	.312	.044	....		
	.054	-.035	.183	-.030	-.128	-.025	.189	.246	.182	.017	-.030	.099	.105	.111	.174	.153	.074	.035	.061	.198	.189	-.002	.246	.141	.244	.122	.155	.106	.200	.082	....	
32	.006	.146	-.015	.204	.077	.126	.131	.180	.155	.221	.307	.146	.284	.143	.259	.173	-.001	.230	.126	.268	.061	-.053	.024	.097	.147	.259	.014	-.124	.220	.012	.118	....

* All values are + unless otherwise indicated.

Table G.6

Ten Unrotated Male Factors for Thirty-Two Items of the Human Trait Inventory Which Had a Sum of Squares in Excess of 1.00

Item Number	Factors 1	2	3	4	5	6	7	8	9	10	h^2*
1	08	29	07	-38	00	-37	48	-05	02	-04	.62
2	29	-38	06	-02	39	11	07	-32	-04	09	.52
3	39	38	31	-11	16	21	29	-05	-17	-22	.64
4	54	-18	-34	-09	09	-03	33	-21	-23	09	.67
5	-25	-45	-16	-21	17	-07	-11	15	28	04	.48
6	50	-27	-02	-37	18	39	-13	-02	14	09	.70
7	23	-31	09	36	-06	15	11	42	-01	05	.51
8	54	07	43	10	-06	-29	-29	-13	-20	01	.72
9	52	27	24	15	-07	-19	-12	-19	-10	11	.53
10	56	-34	-03	-04	24	-06	00	-07	-29	-12	.59
11	33	-50	-13	05	29	10	-31	22	08	-18	.66
12	43	22	-23	47	-10	19	-05	-26	04	33	.73
13	58	-19	02	-04	16	-38	01	-05	03	00	.55
14	45	-12	00	-46	-37	26	07	-09	29	-13	.73
15	54	-28	-19	-04	-33	-14	04	11	-17	-12	.60
16	42	-18	-32	14	-02	-13	-01	00	15	50	.62
17	44	42	-18	-28	10	-03	13	11	15	14	.56
18	42	07	-38	26	07	-10	-05	07	-03	-41	.58
19	42	33	-27	24	-17	21	12	-08	21	-12	.57
20	54	-28	30	-11	-19	-26	-24	-05	09	04	.63
21	41	08	45	-20	-27	25	-23	-27	08	-01	.69
22	38	50	-38	-05	06	04	-40	08	-09	-03	.72
23	40	30	29	-18	42	-09	01	32	25	06	.72
24	39	-14	-11	-43	-16	09	-09	28	-32	27	.66
25	40	-08	31	19	18	20	22	22	-35	05	.60
26	49	-30	-33	-01	-20	-08	23	-06	15	-11	.57
27	33	41	21	12	24	-17	-10	-03	36	-07	.56
28	30	60	-33	-16	-09	01	-23	20	-19	-22	.77
29	44	-16	32	24	-01	36	12	00	13	-18	.57
30	38	40	-20	11	23	12	12	00	09	17	.47
31	32	11	33	17	-34	-08	17	49	12	17	.69
32	38	-35	-02	22	-07	-25	08	-02	21	-23	.48
Sum of Squares	5.70	3.12	2.10	1.66	1.36	1.28	1.22	1.18	1.11	1.02	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.7

Item Intercorrelations of Thirty-One Items Used In Factor Analysis of Human Trait Inventory*

(Females N = 150)

	Item																														
Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1	....																														
2	.130	....																													
3	.050	.008	....																												
4	.141	.002	.203	....																											
5	.223	.247	.048	.256	....																										
6	.080	.179	.027	.113	.268	....																									
7	.113	.123	-.065	-.169	.097	.121	....																								
8	.135	.111	.191	.207	.246	.147	.149	....																							
9	-.093	-.048	-.001	.088	.066	.007	-.045	.058	....																						
10	.137	.130	.159	.148	.256	.114	.046	.234	.303	....																					
11	.154	.292	.027	.113	.358	.292	.122	.196	-.027	.147	....																				
12	.099	.295	.138	.108	.419	.300	.143	.178	.024	.225	.556	....																			
13	.092	.030	.087	.120	.207	.157	.244	.268	.107	.159	.065	.051	....																		
14	-.024	.104	.113	.079	.135	.188	.075	.118	.058	.147	.075	.042	.204	....																	
15	-.022	-.017	.097	.007	.159	.126	.131	.201	.093	.336	.126	.173	.183	-.094	....																
16	.186	.146	.242	.226	.377	.304	.067	.285	.283	.348	.149	.186	.107	.085	.281	....															
17	.194	.180	-.058	.031	-.023	.113	.100	.122	.166	.107	.113	.079	.041	-.008	.022	-.019	....														
18	.196	.060	.042	.117	.102	.069	.010	.076	.075	.058	.126	.095	-.136	.117	.098	.088	.148	....													
19	.046	-.028	.054	.106	.101	.213	-.032	.010	.094	.123	.047	.046	-.007	.167	.043	.046	.099	.146	....												
20	.087	.048	.146	.246	.192	.221	-.079	.239	.290	.367	.087	.175	.202	.186	.327	.386	.043	.062	.083	....											
21	.122	-.041	.070	.056	.084	.125	.060	.083	.124	.249	-.031	.122	.152	.092	.380	.206	-.021	.019	.172	.398	....										
22	.064	.084	.183	.176	.320	.122	.149	.281	.016	.031	.075	.188	.242	.091	.175	.208	-.047	-.068	-.027	.226	.145	....									
23	.129	.208	.026	.074	.185	.187	-.049	.068	-.068	.145	.187	.189	.081	.165	.046	.079	.039	.083	.014	.212	-.016	-.011	....								
24	.134	-.070	.094	.211	.132	.098	.102	.246	-.016	.067	.037	-.082	.147	.100	-.035	.064	-.074	-.095	.008	.071	.051	.156	.041	....							
25	-.126	.032	.255	.141	.223	.007	-.065	.307	.229	.137	-.066	.035	.254	.141	.141	.186	-.073	.045	.134	.204	.088	.188	-.105	.242	....						
26	.069	.081	.162	.125	.066	.255	.117	.160	.207	.241	.054	.099	.176	.156	.262	.343	.103	-.012	.091	.630	.316	.158	.070	.032	.128	....					
27	.087	.117	.140	.296	.080	.059	-.162	.323	.056	.321	.059	.087	.064	.128	.190	.275	.172	.106	.165	.180	.211	.161	.043	-.074	.185	.156	....				
28	-.013	.096	.077	.009	.165	.174	.107	.036	-.102	.084	.072	.123	.071	.056	.139	.033	.094	.164	.092	.089	.063	.079	.072	.042	-.058	.081	-.002	....			
29	.180	.076	.050	.141	.167	.134	-.007	.210	-.121	.079	.200	.239	.035	.141	.107	.225	.014	.282	.114	.136	.150	.116	.100	.020	.004	.029	.250	-.016	....		
30	.203	-.029	.205	.320	.169	.020	.120	.149	.118	.155	.156	.084	.244	.075	.131	.194	-.041	.149	.022	.139	-.035	.149	.032	.152	.262	.226	.200	-.018	.047	....	
31	.043	.054	.056	.125	.053	.030	.102	.169	.166	.154	-.044	-.022	.064	.058	.082	.214	.120	.025	-.053	.156	.064	-.014	.172	.149	.043	.145	.050	.186	-.063	-.018	....

* All values are + unless otherwise indicated.

Table G.8

Twelve Unrotated Female Factors for Thirty-One Items of the Human Trait Inventory Which Had a Sum of Squares in Excess of 1.00

Item Number	Factors												
	1	2	3	4	5	6	7	8	9	10	11	12	h^2*
1	29	28	11	-08	30	-25	-25	-38	-36	-01	15	00	.69
2	28	48	-04	08	08	06	29	09	12	31	-06	12	.55
3	33	-21	27	-10	-05	04	04	-07	26	-15	-25	35	.52
4	42	-12	39	-30	19	09	09	-18	-07	-12	18	02	.56
5	57	29	24	13	-12	06	15	07	02	-18	12	-26	.62
6	45	30	-12	06	-10	37	-10	14	-11	-03	27	-01	.57
7	23	18	-19	64	15	-37	-27	16	-07	-05	-19	-01	.84
8	54	-06	26	09	12	-16	-03	-04	27	32	05	-12	.61
9	27	-38	-28	-08	22	-07	43	32	-15	-14	12	-21	.75
10	58	-07	-31	14	16	-30	02	12	-03	-04	-33	-16	.72
11	40	59	10	04	-13	-05	22	09	-11	-10	05	02	.62
12	47	51	00	04	-31	-05	25	10	04	-10	01	01	.79
13	40	-18	15	43	03	01	-16	13	-14	21	04	19	.54
14	31	00	08	-03	15	42	-25	39	-11	22	-39	05	.74
15	45	-15	-32	07	-34	-27	-08	-14	21	-15	-02	01	.62
16	63	-11	-06	-08	-05	-02	22	-15	00	-09	-04	-23	.56
17	16	21	-30	-12	49	-20	03	12	07	28	42	23	.78
18	21	24	-03	-46	23	-16	-22	10	13	-36	-15	01	.62
19	22	00	-10	-35	02	15	-37	48	-04	-13	21	-09	.64
20	63	-29	-29	-10	-11	26	09	-18	-18	02	01	07	.74
21	40	-25	-37	-07	-31	-01	-35	-14	-07	07	08	-15	.64
22	42	-09	30	24	-30	-02	-05	-09	13	17	23	11	.54
23	26	33	-06	-03	17	42	10	-25	-11	08	-35	00	.60
24	21	-18	42	31	25	19	-24	-13	-06	-09	16	-32	.66
25	36	-45	35	01	-03	-01	12	39	20	-01	-01	-07	.66
26	53	-29	-35	03	-05	18	03	-12	-25	02	06	34	.71
27	44	-13	05	-46	03	-23	-01	-01	21	40	-04	08	.69
28	20	20	-18	14	09	24	-28	-04	54	-35	13	26	.77
29	34	27	15	-38	-19	-12	-32	-11	-02	18	-17	-24	.63
30	39	-16	37	-01	16	-26	04	02	-29	-32	-11	38	.76
31	23	-13	-20	16	51	21	12	-30	34	-05	-05	-21	.71
Sum of Squares	4.88	2.26	1.80	1.70	1.44	1.37	1.21	1.25	1.16	1.13	1.05	1.03	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.9

Item Intercorrelations of Twenty-Two Items Used in
Factor Analysis of Generalized Situational Choice Inventory*

(Male Over-Achievers N = 171) (Male Under-Achievers N = 137)

	Item																					
Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	....																					
2	.076	....																				
3	.114	.353	....																			
4	.106	.280	.246	....																		
5	-.016	.176	.128	.168	....																	
6	.051	.010	.233	.151	.044	....																
7	.177	.236	.423	.154	.119	.259	....															
8	.134	.065	.137	.101	.017	.124	.188	....														
9	.018	.152	.134	.075	.122	.128	.217	.021	....													
10	.014	.260	.477	.242	.098	.162	.433	.144	.144	....												
11	.032	.174	.263	.167	.014	.131	.098	.215	.094	.209	....											
12	.028	.199	.200	.169	.120	-.009	.035	.036	.204	.134	.141	....										
13	.106	.204	.325	.453	.138	.019	.300	.069	.111	.371	.076	.129	....									
14	.136	.247	.334	.367	.097	.168	.312	.100	.159	.223	.122	.098	.269	....								
15	.076	.252	.265	.114	.076	.047	.169	-.003	.186	.132	.132	.236	.052	.092	....							
16	.083	.178	.114	.190	.037	.030	.104	.090	.156	.074	.154	.202	.211	.171	.106	....						
17	.102	.160	.165	.103	.115	.029	.153	-.010	.147	.039	.105	.168	.115	.105	.171	.146	....					
18	.115	.060	.148	.128	-.037	.059	.123	.024	.024	.127	.091	.048	.009	.160	.002	.093	-.004	....				
19	.068	.233	.505	.212	.171	.248	.377	.185	.084	.339	.156	.078	.325	.266	.192	.126	.131	.113	....			
20	.141	.253	.624	.272	.156	.242	.430	.114	.184	.374	.228	.193	.350	.302	.191	.151	.158	.204	.509	....		
21	.193	.197	.187	.202	.067	.045	.137	.043	.102	.091	.136	.263	.223	.124	.123	.280	.124	.111	.176	.273	....	
22	.012	.182	.282	.129	.025	.051	.069	-.020	.163	.148	.102	.257	.123	.095	.124	.142	.122	.043	.153	.222	.330	....

* All values are + unless otherwise indicated.

Table G.10

Six Unrotated Male Factors for Twenty-Two Items of the Generalized Situational Choice Inventory Which Had a Sum of Squares in Excess of 1.00

Item Number	1	2	3	4	5	6	h^2*
1	23	-02	-48	-48	34	00	.63
2	52	21	14	-08	-14	-11	.37
3	75	-17	17	16	07	14	.67
4	52	05	-20	03	-19	-47	.57
5	25	14	41	-20	-07	-37	.43
6	31	-38	-05	-03	06	36	.81
7	60	-35	11	-22	18	05	.58
8	24	-29	-32	-23	-52	20	.61
9	34	23	23	-24	04	22	.33
10	59	-28	19	23	-13	-04	.86
11	37	02	-17	05	-55	34	.59
12	36	55	03	10	-13	13	.48
13	55	-04	-03	09	-06	-54	.61
14	53	-13	-14	-14	05	-24	.40
15	36	28	28	-24	02	30	.83
16	35	36	-36	-09	-16	-06	.42
17	30	31	13	-44	13	08	.41
18	23	-12	-40	18	32	08	.37
19	63	-27	14	07	07	03	.50
20	73	-16	06	14	18	08	.62
21	43	42	-36	17	18	01	.55
22	37	40	-01	45	16	20	.55
Sum of Squares	4.70	1.65	1.29	1.10	1.08	1.25	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.11

Item Intercorrelations of Twenty-Three Items Used in Factor Analysis of Generalized Situational Choice Inventory*

(Female Over-Achivers N = 50)   (Female Under-Achievers N = 50)

Item	12	24	33	37	41	44	45	52	57	61	68	70	101	104	129	131	132	141	167	175	183	190	200
12	....																						
24	.488	....																					
33	.229	.181	....																				
37	-.028	-.101	.322	....																			
41	-.065	-.065	.308	.428	....																		
44	.177	.086	.437	.105	.331	....																	
45	-.022	.121	.158	-.033	.184	.180	....																
52	-.016	-.028	.141	.063	.339	.213	-.009	....															
57	-.135	-.062	.148	.255	.267	-.019	.100	.153	....														
61	.012	.145	.226	.059	.107	.109	.072	.079	.255	....													
68	.216	.117	-.065	-.064	-.162	.004	.165	-.040	.023	.044	....												
70	.071	.010	.021	.171	.206	-.016	.134	.376	.191	.119	-.042	....											
101	.221	.100	.131	.171	.037	.102	.076	.064	.024	-.053	.020	.162	....										
104	.300	.155	.064	-.033	-.091	-.067	.082	-.038	.043	-.141	.146	-.013	.100	....									
129	.246	.201	.146	-.011	.169	.219	.191	.020	-.049	.088	.237	-.013	.143	.191	....								
131	.147	.056	.230	.085	.096	.252	.103	.215	.212	.104	.215	.175	.134	.197	.217	....							
132	-.002	.026	.356	.457	.472	.186	.181	.106	.043	.094	-.151	.211	.178	.107	.203	.002	....						
141	.007	-.008	.319	.437	.573	.197	.157	.164	.149	.029	-.137	.269	.277	-.059	.262	.101	.736	....					
167	.292	.235	.282	.132	.198	.357	.091	.178	.091	.138	.135	.239	.294	.182	.321	.159	.103	.079	....				
175	.080	-.040	-.060	.080	.181	.142	.202	.225	.073	.063	.169	.204	.223	.111	.297	.103	.214	.119	.181	....			
183	.206	.294	.235	.157	.214	.313	.333	.202	.248	.187	.202	.184	.199	.245	.063	.244	.238	.197	.259	.304	....		
190	.135	.016	.048	.111	.213	.119	-.017	.280	.240	.122	.064	.297	.227	-.043	.091	-.040	.162	.344	.115	.300	.218	....	
200	.052	.012	.236	-.010	.131	.142	.214	-.028	.031	.013	.069	.060	.240	.024	.248	.104	.164	.222	.188	.019	.236	.016	....

* All values are + unless otherwise indicated.

Table G.12

Nine Unrotated Female Factors for Twenty-Three Items of the Generalized Situational Choice Inventory Which Had a Sum of Squares in Excess of 1.00

Item Number	1	2	3	4	5	6	7	8	9	h^2*
1	28	-62	-18	10	-47	07	05	08	00	.72
2	22	-55	-15	-12	-35	13	40	05	21	.73
3	56	-01	-41	-42	-14	04	-08	-05	-02	.69
4	46	443	-15	-01	-12	37	-15	13	-23	.67
5	63	45	-09	-09	06	-12	-04	19	07	.68
6	51	-11	-21	-33	-03	-49	-15	09	10	.70
7	35	-16	-03	-04	60	00	27	-07	38	.74
8	40	17	48	-12	-21	-32	-26	04	28	.71
9	32	22	40	-35	14	44	00	-10	-22	.71
10	26	00	18	-53	-02	01	47	04	-30	.70
11	09	-53	25	03	31	07	02	17	-33	.59
12	42	16	47	13	-18	04	-01	-24	20	.57
13	41	-15	-02	42	-17	05	-10	-49	-17	.67
14	16	-46	-02	22	04	49	-31	21	22	.71
15	42	-37	-18	22	21	-27	00	28	-35	.72
16	37	-26	17	-29	16	10	-54	01	-10	.66
17	62	36	-34	225	04	16	12	20	10	.79
18	67	43	-26	27	00	06	08	03	-05	.78
19	52	-35	02	-07	-21	-17	-14	-13	-12	.52
20	41	-10	40	38	22	-20	05	28	-01	.66
21	59	-26	18	-13	15	22	15	-07	32	.66
22	42	14	43	26	-26	-10	28	-02	-18	.64
23	34	-13	-28	07	36	-11	01	-61	-10	.74
Sum of Squares	4.37	2.47	1.66	1.47	1.35	1.21	1.14	1.05	1.00	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.13

Item Intercorrelations of Twenty Items Used in Factor Analysis of Preferred Job Characteristics Scale*

(Males N = 100)

	Item																			
Item	4	5	12	17	24	26	28	29	31	32	36	42	43	44	49	50	53	55	57	62
4	....																			
5	.162	....																		
12	.140	.634	....																	
17	.247	.184	.204	....																
24	-.015	.243	.432	.322	....															
26	.258	.524	.679	.239	.301	....														
28	-.015	.360	.545	.187	.458	.362	....													
29	.161	.098	.364	.104	.104	.451	.364	....												
31	.170	.085	.110	.204	.342	.195	.134	.115	....											
32	.148	.144	.176	.486	.336	.190	.261	.154	.431	....										
36	.116	.264	.517	.273	.412	.385	.550	.470	.079	.278	....									
42	.030	.191	.295	.227	.388	.164	.388	.082	.079	.206	.406	....								
43	.038	.247	.375	.187	.390	.424	.458	.364	.065	.261	.550	.388	....							
44	.211	.256	.316	.301	.301	.209	.424	.293	.385	.396	.385	.164	.301	....						
49	-.025	.144	.302	.411	.261	.327	.561	.346	.201	.419	.508	.294	.486	.396	....					
50	.124	.074	.258	.334	.168	.188	.334	.202	.266	.134	.522	.460	.251	.264	.503	....				
53	.090	.146	.218	.416	.221	.202	.221	.250	.373	.591	.306	.046	.286	.261	.375	.144	....			
55	.118	.375	.519	.241	.313	.369	.313	.327	.332	.315	.555	.362	.241	.236	.234	.479	.420	....		
57	.124	.074	.398	.251	.334	.264	.418	.522	.096	.319	.522	.264	.334	.339	.411	.183	.224	.300	....	
62	.017	.405	.573	.334	.397	.535	.461	.401	.224	.287	.551	.338	.397	.418	.429	.368	.295	.540	.368	....

* All values are + unless otherwise indicated.

Table G.14

Five Unrotated Male Factors for Twenty Items of the Preferred Job Characteristics Scale Which Had a Sum of Squares in Excess of 1.00

Item Number	Factors 1	2	3	4	5	h^2*
1	20	16	46	20	55	.62
2	48	-34	55	-26	-14	.74
3	72	-42	32	-07	-08	.81
4	50	45	06	-11	09	.48
5	59	04	-04	-32	-39	.60
6	63	-32	43	12	00	.71
7	70	-22	-21	00	-23	.64
8	54	-17	-03	63	16	.75
9	38	55	25	-16	02	.54
10	54	62	08	03	-23	.73
11	78	-17	-25	07	16	.72
12	50	-13	-36	-48	15	.65
13	63	-17	-23	11	-20	.53
14	58	24	05	13	-05	.42
15	67	15	-38	13	-05	.64
16	54	07	-34	-29	58	.83
17	51	52	14	13	-17	.60
18	66	-01	16	-23	28	.59
19	59	-04	-22	43	-02	.59
20	75	-16	07	-07	-02	.59
Sum of Squares	6.94	1.85	1.53	1.29	1.15	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.

Table G.15

Item Intercorrelations of Twenty-Three Items Used in Factor Analysis of Preferred Job Characteristics Scale*

(Females N = 100)

	Item																						
Item	1	5	10	12	13	16	19	23	26	30	32	33	39	40	44	46	48	51	53	54	55	59	62
1	....																						
5	.046	....																					
10	.222	.272	....																				
12	-.144	.472	.179	....																			
13	.294	.386	.285	.417	....																		
16	.110	-.053	.149	.126	.285	....																	
19	-.069	.408	.121	.529	.351	.063	....																
23	.036	.130	.406	.037	.027	.079	.171	....															
26	-.154	.340	.278	.518	.308	.035	.475	.342	....														
30	.153	.101	.379	.128	.331	.300	.277	.498	.313	....													
32	.028	.101	.379	.248	.136	.379	-.050	.132	.178	.116	....												
33	-.027	.319	.355	.422	.198	.159	.482	.338	.534	.166	.239	....											
39	.081	.054	.357	.029	-.032	.063	.055	.572	.161	.324	.324	.201	....										
40	.130	.048	.183	.183	.153	.481	-.021	.017	.134	.171	.421	.058	.082	....									
44	.024	.049	.180	.175	.207	.180	.126	.374	.325	.408	.277	.212	.218	.287	....								
46	.056	.061	.470	.235	.218	.382	.228	.389	.334	.565	.367	.319	.393	.327	.301	....							
48	-.015	.218	.052	.484	.184	.256	.421	.135	.294	.040	.116	.501	.045	.225	.140	.178	....						
51	.129	.162	.182	.183	.153	.034	.349	.276	.326	.171	.254	.333	.186	.137	.287	.140	.011	....					
53	-.102	.308	.354	.272	.239	.047	.187	.294	.286	.101	.187	.358	.093	.073	.187	.249	.245	.395	....				
54	-.015	.166	.324	.126	.128	.120	.196	.292	.294	.419	.116	.126	.139	.225	.365	.348	.090	.153	.319	....			
55	-.027	.319	.224	.422	.198	.159	.536	.414	.534	.312	.093	.638	.209	.058	.226	.319	.501	.265	.287	.188	....		
59	-.030	.027	.259	.222	.109	.069	.331	.456	.380	.425	.071	.243	.277	-.030	.331	.372	.038	.436	.259	.523	.302	....	
62	.189	.396	.373	.352	.273	.040	.452	.277	.445	.253	.178	.479	.037	.070	.176	.417	.268	.210	.303	.140	.479	.261	....

*All values are + unless otherwise indicated.

Table G.16

Seven Unrotated Female Factors for Twenty-Three Items of the Preferred Job Characteristics Scale Which Had a Sum of Squares in Excess of 1.00

Item Number	Factors 1	2	3	4	5	6	7	h²*
1	08	-22	-24	-68	13	-22	40	.80
2	46	44	-07	-34	12	19	-27	.64
3	58	-30	-03	-32	34	08	-31	.74
4	58	48	-23	11	-11	12	-13	.68
5	46	15	-37	-51	-25	02	00	.70
6	32	-30	-62	19	-17	-18	09	.68
7	60	49	12	-03	-22	-16	12	.71
8	58	-35	43	07	21	-19	01	.73
9	70	23	12	06	-08	03	03	.57
10	58	-42	10	-18	-32	-32	-08	.77
11	40	-33	-44	19	36	33	02	.73
12	69	31	03	19	30	-10	12	.72
13	39	-46	23	13	43	-17	00	.65
14	30	-31	-64	19	-11	16	08	.68
15	50	-31	01	15	-27	12	22	.52
16	65	-39	-12	06	00	-20	-23	.68
17	46	41	-29	36	04	-25	02	.66
18	48	-03	20	-07	05	46	62	.87
19	52	10	10	00	14	51	-16	.59
20	48	-29	18	00	-44	23	-31	.70
21	69	30	12	19	07	-29	12	.73
22	56	-22	47	04	-32	11	10	.70
23	62	24	01	-27	16	-13	-04	.56
Sum of Squares	6.42	2.47	1.93	1.42	1.30	1.24	1.02	

Note: Values are positive unless otherwise indicated, and decimals are omitted in body of table.

*Communality.